

Drinking Water Surveillance Program

**KENORA
WATER TREATMENT
PLANT**

Annual Report 1989



**Environment
Environnement**

**KENORA
WATER TREATMENT PLANT**

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1989

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P I B S 1405



EXECUTIVE SUMMARY**DRINKING WATER SURVEILLANCE PROGRAM****KENORA WATER TREATMENT PLANT
1989 ANNUAL REPORT**

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, there were 65 plants being monitored.

The Kenora Water Treatment Plant is a conventional treatment plant which treats water from the Lake of the Woods. The treatment process consists of coagulation, flocculation, clarification (in an upflow clarifier), filtration, disinfection, fluoridation and corrosion control. This plant has a design capacity of 26 x 1000 m³/day and serves a population of approximately 16,000.

Water samples of the raw and treated water from the plant and from two distribution system sites were taken on a monthly basis and sampled for approximately 180 parameters. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organic (Chloroaromatics, Chlorophenols, Pesticides and PCB, Phenolics, Polynuclear Aromatic Hydrocarbons, Specific Pesticides and Volatiles). Chlorophenols and Specific Pesticides were analyzed for in November only. Phenols and PAHs are only analyzed in the water from the plant.

A summary of results is shown in Table A.

Inorganic and Physical parameters were below any applicable health related ODWOS.

Of a total of approximately 110 Organic parameters tested monthly basis, none exceeded health related guidelines.

During 1989 the DWSP sampling results indicated that the Kenora Water Treatment Plant produced good quality water at the plant and this quality was maintained in the distribution system.

TABLE A

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP

SUMMARY TABLE BY SCAM

SCAM	RAW			TREATED			SITE 1			SITE 2		
	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE
BACTERIOLOGICAL	11	1	9	19	2	10	7	0	0	.	.	.
CHEMISTRY (FLD)	41	32	78	70	69	98	74	74	100	27	27	100
CHEMISTRY (LAB)	240	204	85	238	175	73	349	301	86	84	67	79
METALS	265	106	40	265	105	39	470	202	42	141	57	40
CHLOROBROMATICS	140	0	0	140	0	0	140	0	0	42	0	0
CHLOROPHENOLS	12	0	0	12	0	0	.	.	.	.	.	.
PAIN	191	0	0	174	0	0	.	.	.	.	.	.
PESTICIDES & PCB	366	0	0	353	0	0	262	0	0	102	0	0
PHENOLICS	12	10	83	11	8	72	.	.	.	.	.	.
SPECIFIC PESTICIDES	63	0	0	51	0	0	10	0	0	3	0	0
VOLATILES	290	16	5	319	34	10	261	28	10	58	6	10
TOTAL	1631	369		1652	393		1573	605		457	157	

NO KNOWN HEALTH RELATED GUIDELINES WERE EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
 A '.' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

KENORA WATER TREATMENT PLANT 1989 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, there were 65 plants being monitored. Appendix A contains a detailed description of the DWSP.

The DWSP was initiated at the Kenora Water Treatment Plant in December 1988.

This report contains information and results for 1989.

PLANT DESCRIPTION

The Kenora Water Treatment Plant is a conventional treatment plant which treats water from the Lake of the Woods. The process consists of coagulation, flocculation, clarification (using an upflow clarifier), filtration, disinfection, fluoridation and corrosion control. This plant has a design capacity of $26 \times 1000 \text{ m}^3/\text{day}$ and sample day flows ranging from $11.6 \times 1000 \text{ m}^3/\text{day}$ to 13.3×1000

m³/day. It serves a population of approximately 16,000.

The plant location is shown in Figure 1. Plant process details, in a block schematic, are shown in Figure 2. General plant information is presented in Table 2.

SAMPLE LOCATIONS

Water samples were obtained from four DWSP approved locations;

- i) Plant Raw - The water originated from the raw water influent prior to chemical addition and was sampled through a stainless steel sample line. The sample tap is located near the lowlift discharge.
- ii) Plant Treated - The water originated from the highlift discharge after addition of all treatment chemicals and was sampled through a stainless steel sample line. The location of the sample tap is unavailable.
- iii) Distribution System - Site 1 - The distance that this house is from the plant and the type of material that the water was sampled through is unknown.
- iv) Distribution System - Site 2 - The distance that this house is from the plant and the type of material that the water was sampled through is unknown.

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM
SITE LOCATION MAP
KENORA WATER TREATMENT PLANT

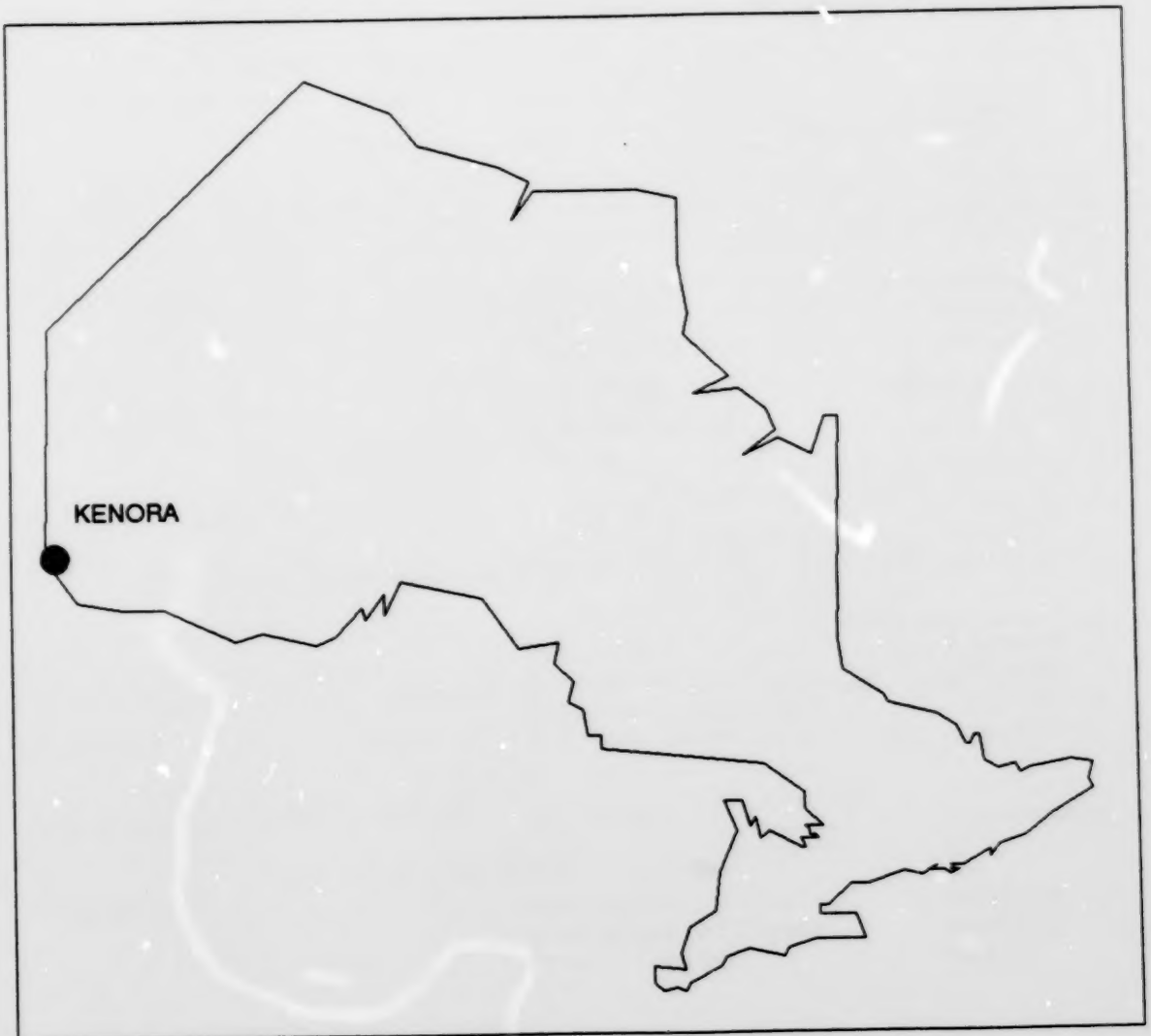
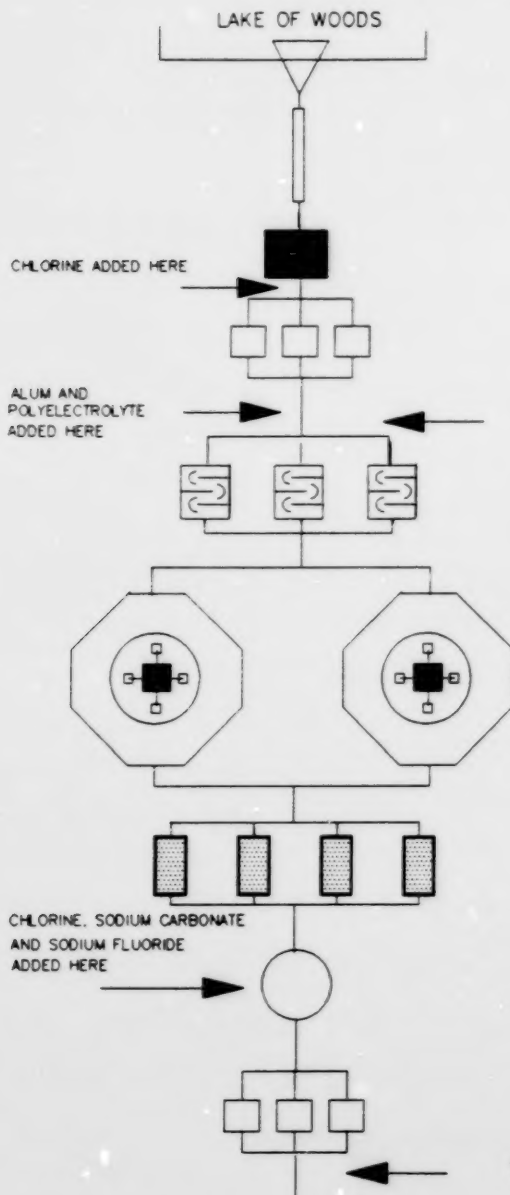


FIGURE No 2

KENORA WTP

SCHEMATIC DIAGRAM



CHARACTERISTICS

1 INTAKE CRIB

1 CONCRETE INTAKE PIPE

1 SCREEN CHAMBER

3 LOWLIFT PUMPS

RAW WATER SAMPLE SITE

3 FLOCCULATION TANKS

2 UPFLOW SOLIDS CONTACT CLARIFIERS

4 CONCRETE FILTER TANKS

CLEARWELL

3 HIGHLIFT PUMPS

TREATED WATER SAMPLE SITE

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORTIN-PLANT MONITORING KENORA WTP 1989

<u>PARAMETER</u>	<u>LOCATION</u>	<u>FREQUENCY</u>
Alkalinity	Raw water	monthly
	Clarifier effluent	monthly
	Treated water	monthly
Aluminum residual	Treated water	monthly
Chlorine residual - free	Raw water	daily
	Clarifier effluent	daily
	Filter effluent	daily
	Clearwell effluent	continuous
	Treated water	continuous
Colour	Raw water	monthly
	Clarifier effluent	monthly
	Treated water	daily
Fluoride	Treated water	daily
Hardness	Raw water	monthly
	Clarifier effluent	monthly
	Treated water	monthly
pH	Raw water	monthly
	Clarifier effluent	monthly
	Clearwell effluent	continuous
	Treated water	daily
Temperature	Raw water	continuous
Turbidity	Raw water	monthly
	Clarifier effluent	monthly
	Treated water	daily

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

KENORA WATER TREATMENT PLANT

LOCATION: 9 SEVENTH STREET S
KENORA, ONTARIO
P9N 1P3
(807-468-7556)

SOURCE: RAW WATER SOURCE - LAKE OF WOODS

DESIGN CAPACITY: 26.0 (1000 M³/DAY)

OPERATION: MUNICIPAL

PLANT SUPERINTENDENT : E. REYNARD

MINISTRY REGION: NORTHWEST

DISTRICT OFFICER: P. FOX

<u>MUNICIPALITY SERVED</u>	<u>POPULATION</u>
JAFFREY-MALLICK	3,500
KEEWATIN	2,500
KENORA	10,000

SAMPLING AND ANALYSES

Sample lines in the plant were flushed prior to sampling to ensure that the water obtained was indicative of its origin and not residual water standing in the sample line.

At the distribution system location two types of samples were obtained: a standing and a free flow. The standing sample consisted of water that had been in the household plumbing and service connection for a minimum of six hours. These samples are used to make an assessment of the amount by which the levels of inorganic compounds and metals may be changed on standing due to leaching from (or deposition on) the plumbing system. The only analyses carried out on the standing samples therefore, are General Chemistry and Metals. The free flow sample represented fresh water from the distribution main that had been flowing at the sample tap for five minutes before being sampled.

Attempts were made to capture the same block of water at each sampling point by taking the retention time into consideration. The retention time was calculated by dividing the volume of water between the two sampling points by the sample day flow. For example, if it was determined that the retention time within the plant was five hours then there would be a five hour interval between the raw and treated sampling. Similarly, if it was estimated that it took approximately one day for the water to

travel from the plant to the distribution system site, this site would be sampled one day after the treated water from the plant.

Stringent DWSP sampling protocols were followed to ensure that all samples were taken in a uniform manner (APPENDIX B).

Plant operating personnel perform analyses on parameters for process control (Table 1).

The Kenora Water Treatment Plant and two locations in the distribution system were sampled for approximately 180 parameters on a monthly basis beginning in December 1988. The Specific Pesticides and Chlorophenols scans were sampled in November only. Polyaromatic Hydrocarbons and Phenolics were only analyzed in the raw and treated water at the plant. As of August the triazine pesticides were only analyzed in the raw and treated water. Laboratory analysis was conducted at the Ministry of the Environment facilities in Rexdale, Ontario.

RESULTS

Field Chemistry measurements were recorded on the day of sampling and were entered on the DWSP data base as submitted by plant personnel.

Table 3 contains information on the sample day retention time, flow

rate and treatment chemicals used and their associated dosages.

Table 4 is a summary break-down of the number of water samples analyzed for by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analyzed in the DWSP.

Associated guidelines and detection limits are also supplied on both tables. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking

Water Objectives (ODWOs) as defined in the 1984 publication (ISBN 0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters, these are currently under review. When an ODWO is not available guidelines/limits from other agencies are consulted. The Parameters Listing System (PALIS) recently published (ISBN 0-7729-4461-X) by the MOE catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

Many of the compounds detected are naturally occurring or are treatment by-products.

Plant operational personnel address occurrences of taste and odour or biological water quality parameters. The DWSP does not assess these aspects of the water supply.

As stated under Results, traces do not indicate quantifiable values, as defined by established MOE Laboratory analytical reporting protocols. The occasional finding of a trace level of a contaminant is thus not considered to be significant. They can be useful in trend analysis, or confirmation of the presence of a specific contaminant that is repeatedly detected at these levels.

DISCUSSION OF GUIDELINES AND LIMITS THEREFORE, IS ONLY CONDUCTED ON POSITIVE RESULTS.

Bacteriology

Bacteriological analyses were only carried out six times in 1989, all other samples were not received at the laboratory within the allotted time for analysis. Positive results for the Bacteriology scan were present two times in the treated water. The positive results were for Standard Plate Count.

Routine Bacteriological monitoring as recommended in the ODWOS is carried out by the operating authority.

Inorganic and Physical Parameters

Laboratory and Field Chemistry

The results for Laboratory and Field Chemistry scans were below any applicable health related ODWOS.

Colour values exceeded the aesthetic ODWO of 5 True Colour Units (TCU) in four treated water samples, standing and free flow samples. Colour in drinking water may be due to the presence of natural or synthetic organic substances as well as certain metallic ions.

As part of the treatment plant process, sodium fluoride is added to the treated water (Table 3). Where fluoridation is practised,

the Fluoride concentration recommended on the ODWO is 1.2 mg/L, plus or minus 0.2 mg/L. This level was not maintained as can be noted in the fluoride results reported in Table 5. Generally, the fluoride results are low.

It is desirable that the Temperature of drinking water be less than 15°C; the palatability of water is enhanced by its coolness. A temperature below 15°C will tend to reduce the growth of nuisance organisms and hence minimize associated taste, colour, odour and corrosion problems. The temperature of the delivered water may increase in the distribution system due to the warming effect of the soil in late summer and fall and/or as a result of higher temperatures in the source water. The desired ODWO was exceeded six times in the treated water and free flow distributed water.

The Langelier Index is used extensively in estimating the corrosion potential of water. An increasingly negative index indicates the increasing possibility of corrosion. It is considered sound engineering practice to maintain a slightly positive Langelier Index. The Langelier Index for Kenora is consistently negative.

Turbidity in water is caused by the presence of suspended matter such as clay, silt, colloidal particles, plankton and other microscopic organisms. The most important potential health effect of Turbidity is its interference with disinfection in the treatment plant and the maintenance of a chlorine residual. The ODWO of 1

Formazin Turbidity Unit (FTU) is only applicable to treated water leaving the plant. The March and October values reported by the laboratory (3.2 and 3.03 FTU) were not supported by the field turbidity value. Protocol for turbidity states that measurements should be made within 48 hours. This is not always achieved except when measured in the field, the field turbidity values are therefore considered the more reliable.

Metals

The results reported for the Metal scan were below any applicable ODWOS.

Levels of Copper, Lead and Zinc were considerably higher in the standing samples as compared to the free flow distribution samples, indicating that these metals were leached from the household plumbing as the water stood overnight. The Langelier Index indicates that corrosion would be expected.

The aesthetic Maximum Desirable Concentration (MDC) of 300 $\mu\text{g/L}$ for Iron in drinking water as outlined in the ODWOS was exceeded in the treated water samples for January (570 $\mu\text{g/L}$), February (910 $\mu\text{g/L}$) and March (460 $\mu\text{g/L}$). This sample site is located on a dead end main and higher levels of iron would not be unexpected. Since March plant personnel have made modifications to this sample site to ensure the continuous flow of water.

Organic Parameters

Chloroaromatics

The results of the Chloroaromatics scan showed that no chloroaromatics were detected.

Chlorophenols

The results of the Chlorophenol scan showed that no Chlorophenols were detected.

Pesticides and PCB

Results of the Pesticides and PCB scan showed that no PCBs were detected and that one pesticide was detected:

Alpha BHC

There are several isomers of BHC (benzene hexachloride); gamma BHC is the active ingredient of the pesticide Lindane, while alpha BHC is the isomer most predominantly found in surface waters of the Great Lakes basin as indicated by results from other water supplies on DWSP.

Alpha BHC was detected at trace levels, four times in the treated water, three times in the Site 1 water and once in the Site 2 water.

Specific Pesticides

The results of the Specific Pesticide scan showed that none were detected.

Phenolics

Phenolics were detected in the raw water, ranging from 1 $\mu\text{g/L}$ to 4.0 $\mu\text{g/L}$ and the treated water, ranging from 1.2 $\mu\text{g/L}$ to 8.0 $\mu\text{g/L}$. The maximum desirable concentration of phenolic substances in drinking water is 2.0 $\mu\text{g/L}$. This limit has been set primarily to prevent the occurrence of undesirable tastes and odours, particularly in chlorinated water. Phenolic compounds are present in the aquatic environment as a result of natural and/or industrial processes.

Polyaromatic Hydrocarbons (PAH)

The results of the PAH scan showed that no PAHs were detected.

Volatiles

The results of the Volatile scan showed that eight parameters, other than Trihalomethanes (THMs) were detected:

Benzene

Toluene

Ethylbenzene

Meta-Xylene

Ortho-Xylene

Styrene

1,1,1-Trichloroethane

1,4-Dichlorobenzene

The detection of benzene, ethylbenzene, toluene and the xylenes at low, trace levels is a laboratory artifact derived from the analytical methodology.

Toluene was detected at $.50 \mu\text{g/L}$ in the May treated water sample and Site 1 sample. Health and Welfare Canada have an Aesthetic Objective (AO) of $24.0 \mu\text{g/L}$ for toluene in drinking water.

Styrene was detected at $1.1 \mu\text{g/L}$ in the March raw water sample. The United States Environmental Protection Agency (EPA) report a Suggested No-Adverse Effect Level (SNAEL) of $46.5 \mu\text{g/L}$ for Styrene in drinking water. The detected trace levels of Styrene are also considered to be laboratory artifacts resulting from the polystyrene shipping containers. The sporadic background levels from this source are in the order of $0.05 \mu\text{g/L}$.

1,1,1-Trichloroethane was detected at trace levels, four times in the raw water.

1,4-Dichlorobenzene was detected at a trace level, once in the treated water.

THMs are known to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs are comprised of Chloroform, Chlorodibromomethane and Dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for total THMs.

Chloroform, Dichlorobromomethane and Total THMs were detected in all treated waters. Chlorodibromomethane was detected at trace levels, three times in the treated water and four times in the Site 1 water. Bromoform was not detected. All Total THM occurrences, excluding the raw water, ranging from 82.15 $\mu\text{g/L}$ to 214 $\mu\text{g/L}$ were below the ODWO of 350 $\mu\text{g/L}$.

All raw water samples contained trihalomethanes. The pre-chlorination stage occurs before the raw water sample line. Although the chlorine feed line is closed prior to sampling enough time is not allowed to remove all traces of chlorine.

CONCLUSIONS

The Kenora Water Treatment Plant for the sampling period of 1989 produced good quality water at the plant and this was maintained in the distribution system.

No health related guidelines, for organic or inorganic parameters, were exceeded during 1989.

RECOMMENDATIONS

Two recommendations can be made:

- 1) The fluoridation process may require modification to ensure that the recommended level is maintained.
- 2) The sample lines need to be reassessed to ensure that they meet DWSP specifications.

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP SAMPLE DAY CONDITIONS FOR 1989

SAMPLE DAY CONDITIONS			TREATMENT CHEMICAL DOSAGES (MG/L)									
DATE	RETENTION TIME(HRS)	FLOW (1000G/3)	PRE-CHLORINATION		COAGULATION		FLUORIDATION		POST-CHLORINATION		CORROSION CONTROL	
			CHLORINE	ALUM LIQUID	POLYELECTROLYTE	SODIUM FLUORIDE	CHLORINE	SODIUM CARBONATE				
JAN 24	.5	.	2.64	42.30	.47	1.14	.45	45.65				
FEB 28	.2	12.5	1.96	46.70	.52	1.14	.98	33.67				
MAR 29	.5	.	1.80	43.80	.53	.84	1.08	27.06				
APR 25	2.5	.	2.24	44.60	.52	.85	.96	23.80				
MAY 24	.	.	2.82	44.20	.52	.82	.	31.23				
JUN 26	.	11.6	3.81	44.60	.47	1.02	1.06	31.31				
JUL 24	.	2.44	2.44	41.70	.49	1.01	1.76	31.15				
AUG 29	.	12.6	3.66	44.57	.48	.96	1.22	30.63				
SEP 26	.5	13.3	2.63	45.60	.48	1.16	1.81	29.34				
OCT 24	6.0	12.2	2.52	42.77	.49	.96	1.07	29.14				
NOV 28	.	12.6	2.02	44.80	.51	.99	.99	32.42				
DEC 12	.	12.4	2.26	45.25	.52	.54	.64	34.78				

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KENORA

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW		TREATED		SITE 1		SITE 2	
		TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE
BACTERIOLOGICAL	FECAL COLIFORM MF	5	0	0	0	0	0	0	0
	FECAL COLIFORM	-	-	-	4	0	1	-	-
	STANDARD PLATE CNT MF	-	-	-	5	2	0	0	0
	COLIFORM	-	-	-	4	0	1	0	0
	TOTAL COLIFORM MF	5	0	0	5	0	2	0	0
	T COLIFORM BCKGRD MF	1	1	0	1	0	1	0	0
*TOTAL SCAN BACTERIOLOGICAL									
		11	1	0	19	2	0	7	0
*TOTAL GROUP BACTERIOLOGICAL									
		11	1	0	19	2	0	7	0
CHEMISTRY (FLD)	FLD CHLORINE (COMB)	3	0	0	11	11	0	15	0
	FLD CHLORINE FREE	3	0	0	11	11	0	14	0
	FLD CHLORINE (TOTAL)	3	0	0	12	12	0	15	0
	FLD PH	11	11	0	12	12	0	15	0
	FLD TEMPERATURE	11	11	0	12	12	0	14	0
	FLD TURBIDITY	10	10	0	12	12	0	1	0
*TOTAL SCAN CHEMISTRY (FLD)									
		41	32	0	70	70	0	74	0
CHEMISTRY (LAB)	ALKALINITY	12	12	0	12	12	0	20	0
	CALCIUM	12	12	0	12	12	0	20	0
	CYANIDE	12	0	0	12	0	0	10	0
	CHLORIDE	12	12	0	12	12	0	20	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KENORA

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE		RAW		TREATED		SITE 1		SITE 2			
		TOTAL POSITIVE TRACE	CH	TOTAL POSITIVE TRACE	CH	TOTAL POSITIVE TRACE	CH	TOTAL POSITIVE TRACE	CH	TOTAL POSITIVE TRACE	CH		
CHEMISTRY (LAB)	COLOUR	12	12	0	12	11	0	20	16	3	5	5	0
	CONDUCTIVITY	12	12	0	12	12	0	20	20	0	4	4	0
	FLUORIDE	12	9	2	12	9	3	20	20	0	4	4	0
	HARDNESS	12	12	0	12	12	0	20	20	0	5	5	0
	IONCAL	12	12	0	12	12	0	20	20	0	6	4	0
	LANGELIERS INDEX	0	0	0	0	0	0	0	0	0	0	0	0
	MAGNESIUM	12	12	0	12	12	0	20	20	0	5	5	0
	SODIUM	12	12	0	12	12	0	20	20	0	5	5	0
	AMMONIUM TOTAL	12	9	2	12	3	4	20	9	8	5	1	4
	NITRITE	12	5	7	12	2	9	20	2	18	5	0	5
	TOTAL NITRATES	12	7	4	12	7	4	20	15	3	5	5	0
	NITROGEN TOT KJELD	12	12	0	12	12	0	20	20	0	4	4	0
	PH	12	12	0	12	12	0	20	20	0	4	4	0
	PHOSPHORUS FIL REACT	12	6	5	12	1	6	-	-	-	-	-	-
	PHOSPHORUS TOTAL	12	12	0	12	1	10	-	-	-	-	-	-
SULPHATE	12	12	0	12	12	0	20	20	0	5	5	0	
TURBIDITY	12	12	0	10	9	1	19	19	0	4	2	2	
*TOTAL SCAN CHEMISTRY (LAB)		240	204	20	238	175	37	349	301	32	84	67	11
METALS	SILVER	11	0	1	11	0	1	20	0	4	6	0	2
	ALUMINIUM	11	11	0	11	11	0	20	20	0	6	6	0
	ARSENIC	11	4	7	11	0	11	20	1	19	6	0	6
	BARIUM	11	11	0	11	11	0	20	20	0	6	6	0

TABLE 6
DRINKING WATER SURVEILLANCE PROGRAM KENORA

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE			RAW			TREATED			SITE 1			SITE 2		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
METALS																
	BORON	11	2	9	11	1	10	20	5	15	6	2	3			
	BERYLLIUM	11	0	5	11	0	2	20	0	9	6	0	2			
	CADMIUM	11	0	3	11	0	2	20	0	1	6	0	3			
	COBALT	11	0	11	11	0	11	20	0	20	6	0	5			
	CHROMIUM	11	5	4	11	3	4	20	7	8	6	2	0			
	COPPER	11	9	2	11	9	2	20	20	0	6	6	0			
	IRON	11	3	8	11	5	6	20	0	16	6	1	4			
	MERCURY	12	0	3	12	0	5	10	8	0	3	1	0			
	MANGANESE	11	11	0	11	11	0	20	20	0	6	5	1			
	MOLYBDENUM	11	0	11	11	2	9	20	5	15	6	1	4			
	NICKEL	11	1	9	11	1	10	20	0	16	6	0	4			
	LEAD	11	10	1	11	10	1	20	20	0	6	5	0			
	ANTIMONY	11	9	2	11	9	2	20	18	2	6	5	0			
	SELENIUM	11	0	5	11	0	5	20	0	10	6	1	4			
	STRONTIUM	11	11	0	11	11	0	20	20	0	6	6	0			
	TITANIUM	11	10	1	11	10	1	20	16	2	6	5	0			
	THALLIUM	11	0	0	11	0	1	20	0	7	6	0	1			
	URANIUM	11	1	7	11	0	5	20	0	9	6	0	1			
	VARADUM	11	0	11	11	0	11	20	0	20	6	0	6			
	ZINC	11	8	2	11	11	0	20	20	0	6	5	1			
*TOTAL SCAN METALS		265	106	102	265	105	99	470	202	177	141	57	47			
*TOTAL GROUP INORGANIC & PHYSICAL		546	342	122	573	350	136	893	577	209	252	151	58			
CHLOROSOMATICS																
HEXACHLOROBUTADIENE		10	0	0	10	0	0	10	0	0	3	0	0			

TABLE 6

DRINKING WATER SURVEILLANCE PROGRAM KENORA

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE 1		SITE 2	
		TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE
CHLOROBIPHENYLS					
	123 TRICHLOROBENZENE	10	0	0	0
	1234 T-CHLOROBENZENE	10	0	0	0
	1235 T-CHLOROBENZENE	10	0	0	0
	124 TRICHLOROBENZENE	10	0	0	0
	1245 T-CHLOROBENZENE	10	0	0	0
	135 TRICHLOROBENZENE	10	0	0	0
	HCB	10	0	0	0
	HEXACHLOROETHANE	10	0	0	0
	OCTACHLOROSTYRENE	10	0	0	0
	PENTACHLOROBENZENE	10	0	0	0
	236 TRICHLOROTOLUENE	10	0	0	0
	245 TRICHLOROTOLUENE	10	0	0	0
	26A TRICHLOROTOLUENE	10	0	0	0
*TOTAL SCAN CHLOROBIPHENYLS		140	0	0	0
CHLOROPHENOLS					
	234 TRICHLOROPHENOL	2	0	0	0
	2345 T-CHLOROPHENOL	2	0	0	0
	2356 T-CHLOROPHENOL	2	0	0	0
	245-TRICHLOROPHENOL	2	0	0	0
	246-TRICHLOROPHENOL	2	0	0	0
	PENTACHLOROPHENOL	2	0	0	0
*TOTAL SCAN CHLOROPHENOLS		12	0	0	0

DRINKING WATER SURVEILLANCE PROGRAM KENORA

SUMMARY TABLE OF RESULTS (1989)

SCAN	SITE	PARAMETER	RAW		TREATED		SITE 1		SITE 2	
			TOTAL POSITIVE TRACE	0	TOTAL POSITIVE TRACE	0	TOTAL POSITIVE TRACE	0	TOTAL POSITIVE TRACE	0
PAN		PHENANTHRENE	12	0	0	11	0	0		
		ANTHRACENE	12	0	0	11	0	0		
		FLUORANTHENE	12	0	0	11	0	0		
		PYRENE	12	0	0	11	0	0		
		BENZO(A)ANTHRACENE	12	0	0	11	0	0		
		CHRYSENE	12	0	0	11	0	0		
		DIMETH. BENZ(A)ANTHR	6	0	0	11	0	0		
		BENZO(E) PYRENE	12	0	0	5	0	0		
		BENZO(B) FLUORANTHEN	12	0	0	11	0	0		
		PERYLENE	12	0	0	11	0	0		
		BENZO(K) FLUORANTHEN	12	0	0	11	0	0		
		BENZO(A) PYRENE	5	0	0	4	0	0		
		BENZO(G,M,I) PERYLEN	12	0	0	11	0	0		
		DIBENZO(A,H) ANTHRAC	12	0	0	11	0	0		
		INDENO(1,2,3-C,D) PY	12	0	0	11	0	0		
		BENZO(B) CHRYSENE	12	0	0	11	0	0		
		CORONENE	12	0	0	11	0	0		
*TOTAL SCAN PAN			191	0	0	174	0	0	0	0

PESTICIDES & PCB										
		ALDRIN	10	0	0	10	0	0	0	0
		ALPHA BHC	10	0	0	10	0	4	10	0
		BETA BHC	10	0	0	10	0	0	10	0
		LINDANE	10	0	0	10	0	0	10	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KENORA

SUMMARY TABLE OF RESULTS (1969)

SCAN	PARAMETER	SITE		RAW		TREATED		SITE 1		SITE 2	
		TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE
PESTICIDES & PCB											
	ALPHA CHLORDANE	10	0	0	10	0	0	10	0	3	0
	GAMMA CHLORDANE	10	0	0	10	0	0	10	0	3	0
	DIELDRIN	10	0	0	10	0	0	10	0	3	0
	METHOXYCHLOR	10	0	0	10	0	0	10	0	3	0
	ENDOSULFAM I	10	0	0	10	0	0	10	0	3	0
	ENDOSULFAM II	10	0	0	10	0	0	10	0	3	0
	ENDRIN	10	0	0	10	0	0	10	0	3	0
	ENDOSULFAM SULPHATE	10	0	0	10	0	0	10	0	3	0
	HEPTACHLOR EPOXIDE	10	0	0	10	0	0	10	0	3	0
	HEPTACHLOR	10	0	0	10	0	0	10	0	3	0
	MIREX	10	0	0	10	0	0	10	0	3	0
	ORYCHLORDANE	10	0	0	10	0	0	10	0	3	0
	OPDOT	10	0	0	10	0	0	10	0	3	0
	PCB	10	0	0	10	0	0	10	0	3	0
	DDD	10	0	0	10	0	0	10	0	3	0
	PPDDE	10	0	0	10	0	0	10	0	3	0
	PPDOT	10	0	0	10	0	0	10	0	3	0
	AMETRINE	10	0	0	10	0	0	10	0	3	0
	ATRAZINE	12	0	0	11	0	0	4	0	3	0
	ATRAZONE	12	0	0	11	0	0	4	0	3	0
	CYANAZINE (BLADEX)	12	0	0	11	0	0	4	0	3	0
	D-ETHYL ATRAZINE	12	0	0	11	0	0	4	0	3	0
	D-ETHYL SIMAZINE	12	0	0	11	0	0	4	0	3	0
	PROMETONE	12	0	0	11	0	0	4	0	3	0
	PROPACINE	12	0	0	11	0	0	4	0	3	0

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM KENORA

SUMMARY TABLE OF RESULTS (1989)

SITE		RAW		TREATED		SITE 1		SITE 2	
SCAN	PARAMETER	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE
PESTICIDES & PCB									
	PROMETHYNE	12	0	0	0	11	0	0	0
	HEPTABUZIN (SENCOR)	12	0	0	0	11	0	0	0
	SIMAZINE	12	0	0	0	11	0	0	0
	ALACHLOR (LASSO)	12	0	0	0	11	0	0	0
	METOLACHLOR	12	0	0	0	11	0	0	0
			0	0	0	11	0	0	0
	*TOTAL SCAN PESTICIDES & PCB	366	0	0	0	353	0	4	262
PHENOLICS									
	PHENOLICS	12	10	2	11	8	3		
	*TOTAL SCAN PHENOLICS	12	10	2	11	8	3	0	0
SPECIFIC PESTICIDES									
	TOLAPHENE	10	0	0	10	0	0	10	0
	2,4,5-T	2	0	0	2	0	0		0
	2,4-D	2	0	0	2	0	0		
	2,4-DB	2	0	0	2	0	0		
	2,4-D PROPIONIC ACID	2	0	0	2	0	0		
	DICAMBA	2	0	0	2	0	0		
	PICHLORAM	0	0	0	2	0	0		
	SILVEX	2	0	0	2	0	0		
	DIAZINON	2	0	0	1	0	0		
	DICHLOROVOS	2	0	0	1	0	0		
	CHLORPYRIFOS	2	0	0	1	0	0		

DRINKING WATER SURVEILLANCE PROGRAM KENORA

SCAN	PARAMETER	SITE		RAW		TREATED		SITE 1		SITE 2	
		TOTAL POSITIVE TRACE	RAU	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE	TOTAL POSITIVE TRACE		
SPECIFIC PESTICIDES											
	ETHION	2	0	0	1	0	0				
	AZINPHOS-METHYL	0	0	0	0	0	0				
	MALATHION	2	0	0	1	0	0				
	HEVINPHOS	2	0	0	1	0	0				
	METHYL PARATHION	2	0	0	1	0	0				
	METHYLTRITRINION	2	0	0	1	0	0				
	PARATHION	2	0	0	1	0	0				
	PHORATE	2	0	0	1	0	0				
	RELDAM	2	0	0	1	0	0				
	RONNEL	2	0	0	1	0	0				
	AMINOCARB	0	0	0	1	0	0				
	BENCHYL	1	0	0	1	0	0				
	BLX	0	0	0	0	0	0				
	CARBOFURAM	2	0	0	2	0	0				
	CICP	2	0	0	2	0	0				
	DIALATE	2	0	0	2	0	0				
	EPTAM	2	0	0	2	0	0				
	IPC	2	0	0	2	0	0				
	PROPOXUR	2	0	0	2	0	0				
	CARBARYL	2	0	0	2	0	0				
	BUTYLATE	2	0	0	2	0	0				
	*TOTAL SCAN SPECIFIC PESTICIDES	63	0	0	51	0	0	10	0	0	3
VOLATILES											
	BENZENE	10	0	2	11	0	3	9	0	1	2

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KENORA

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE		TREATED		SITE 1		SITE 2					
		RAW	POSITIVE TRACE	TOTAL POSITIVE TRACE	POSITIVE TRACE	TOTAL POSITIVE TRACE	POSITIVE TRACE	TOTAL POSITIVE TRACE					
VOLATILES	TOLUENE	10	0	3	11	1	6	9	1	5	2	0	0
	ETHYLBENZENE	10	0	1	11	0	2	9	0	2	2	0	0
	P-XYLENE	10	0	0	11	0	0	9	0	0	2	0	0
	M-XYLENE	10	0	1	11	0	2	9	0	0	2	0	0
	O-XYLENE	10	0	1	11	0	4	9	0	5	2	0	0
	STYRENE	10	1	1	11	0	9	9	0	5	2	0	0
	1,1 DICHLOROETHYLENE	10	0	0	11	0	0	9	0	5	2	0	1
	METHYLENE CHLORIDE	10	0	0	11	0	0	9	0	0	2	0	0
	1,2 DICHLOROETHYLENE	10	0	0	11	0	0	9	0	0	2	0	0
	1,1 DICHLOROETHANE	10	0	0	11	0	0	9	0	0	2	0	0
	CHLOROFORM	10	10	0	11	0	0	9	0	0	2	0	0
	111, TRICHLOROETHANE	10	0	4	11	11	0	9	9	0	2	2	0
	1,2 DICHLOROETHANE	10	0	0	11	0	0	9	0	0	2	0	0
	CARBON TETRACHLORIDE	10	0	0	11	0	0	9	0	0	2	0	0
	1,2 DICHLOROPROPANE	10	0	0	11	0	0	9	0	0	2	0	0
	TRICHLOROETHYLENE	10	0	0	11	0	0	9	0	0	2	0	0
	DICHLOROBROMOETHANE	10	1	8	11	11	0	9	9	0	2	0	0
	112 TRICHLOROETHANE	10	0	0	11	0	0	9	0	0	2	0	0
	CHLORODIBROMOETHANE	10	0	0	11	0	3	9	0	4	2	0	0
	T-CHLOROETHYLENE	10	0	0	11	0	0	9	0	0	2	0	0
	BROMOFORM	10	0	0	11	0	0	9	0	0	2	0	0
	1122 T-CHLOROETHANE	10	0	0	11	0	0	9	0	0	2	0	0
	CHLOROBENZENE	10	0	0	11	0	0	9	0	0	2	0	0
	1,4 DICHLOROBENZENE	10	0	0	11	0	0	9	0	0	2	0	0
	1,3 DICHLOROBENZENE	10	0	0	11	0	1	9	0	0	2	0	0
			0	0	0	11	0	0	9	0	0	2	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KENORA

SUMMARY TABLE OF RESULTS (1989)

SCAM	PARAMETER	SITE		TREATED		SITE 1		SITE 2	
		TOTAL	RAW	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL
VOLATILES	1,2 DICHLOROBENZENE	10	0	0	11	0	0	9	0
	ETHYLENE DIBROMIDE	10	0	0	11	0	0	9	0
	TOTL TRINALONETHAMES	10	4	6	11	11	0	9	0
*TOTAL SCAM VOLATILES		290	16	27	319	34	30	261	28
*TOTAL GROUP ORGANIC		1074	26	29	1060	42	37	673	28
TOTAL		1631	369	151	1652	394	173	1573	605
									236
									457
									157
									60

KEY TO TABLE 5 and 6

- A** **ONTARIO DRINKING WATER OBJECTIVES (ODWO)**
1. Maximum Acceptable Concentration (MAC)
 - 1+. MAC for Total Trihalomethanes
 - 1*. MAC for Bacteriological Analyses
- Poor water quality is indicated when :
- total coliform counts $> 0 < 5$
 - P/A Bottle Test is present after 48 hours
 - Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
 - Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
 - Standard Plate Count should not exceed 500 organisms per ml at 35 °C within 48 hours
2. Interim Maximum Acceptable Concentration (IMAC)
 3. Maximum Desirable Concentration (MDC)
 4. Aesthetic or Recommended Operational Guideline
- hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness > 200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.
- B** **HEALTH & WELFARE CANADA (H&W)**
1. Maximum Acceptable Concentration (MAC)
 2. Proposed MAC
 3. Interim MAC
 4. Aesthetic Objective (AO) (for xylenes, a total)
- C** **WORLD HEALTH ORGANIZATION (WHO)**
1. Guideline Value (GV)
 2. Tentative GV
 3. Aesthetic GV
- D** **US ENVIRONMENTAL PROTECTION AGENCY (EPA)**
1. Maximum Contaminant Level (MCL)
 2. Suggested No-Adverse Effect Level (SNAEL)
 3. Lifetime Health Advisory
 4. EPA Ambient Water Quality Criteria
 5. Maximum Contaminant Level Goal (MCLG)
- F** **EUROPEAN ECONOMIC COMMUNITY (EEC)**
1. Health Related Guideline Level
 2. Aesthetic Guideline Level
 3. Maximum Admissible Concentration (MADC)
- G** **CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE**
- H** **USSR MAXIMUM PERMISSIBLE CONCENTRATION**
- I** **NEW YORK STATE AMBIENT WATER GUIDELINE**
- N/A** **NONE AVAILABLE**

INTERPRETATION OF DATA

The interpretation of analytical results that are obtained from measurements near the limit of detection of the measurement process is subject to greater uncertainty than those at higher concentrations. The principle areas of concern relate to whether the substance has actually been detected, whether it has been properly identified, and whether it is an artifact of the measurement process. In other words, false positives can be caused by the instrumentation or the test procedures used, when in fact these compounds are not present in the sample.

There are several methods to treat data from such measurements:

1. Exclude the low-level data because of this uncertainty factor. However, studies of long-term environmental trends and modelling may be adversely affected by exclusion of such data.
2. Qualify these data so the user is aware of the greater uncertainty associated with their use.

For the Drinking Water Surveillance Program, measurements near the limit of detection of the measurement process are reported qualified by the code "<T". Results quantified by "W" indicate a zero measurement. These results are reported for purposes of modelling and long-term trend analysis and no significance should be attributed to a single determination of a substance below "T" (a single determination may well be a false positive). Repeat analysis or additional data are needed before it can be stated with certainty that the substance in question was truly present. On the other hand, it is less likely that repeated detection of a substance at or near the limit of detection at a specific location is solely due to an artifact in the measurement system, and more likely represents a true positive. However the average of such data is still only an estimate of the amount of substance present subject to the possible biases of the method used.

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident (SEE INTERPRETATION OF RESULTS ABOVE)
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!AW	No Data: Analysis Withdrawn
!CR	No Data: Could Not Confirm By Reanalysis
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident

!LD	No Data: Test Queued After Sample Discarded
!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!QU	No Data: Quality Control Unacceptable
!PE	No Data: Procedural Error - Sample Discarded
!PH	No Data: Sample pH Outside Valid Range
!RE	No Data: Received Empty
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
!TX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample
RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UAL	Unreliable: Sample Age Exceeds Normal Limit
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours
T# (T06)	Result Taken After # Hours

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
RAW	TREATED		SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
BACTERIOLOGICAL						
FECAL COLIFORM ()			DET'N LIMIT = N/A		GUIDELINE = 0 (A1)	
JAN	.	0	.	.	.	.
FEB	.	0	.	.	.	.
MAR	.	0	.	.	.	.
APR	.	0	.	.	.	.
MAY	.	.	.	0	.	.
STANDRD PLATE CNT MF ()			DET'N LIMIT = 0		GUIDELINE = 500/ML (A1)	
JAN	.	0	.	.	.	.
FEB	.	0	.	.	.	.
MAR	.	0	.	.	.	.
APR	.	1	.	.	.	.
MAY	.	.	.	0	.	.
DEC	.	13	.	4 <=>	.	.
COLIFORM ()			DET'N LIMIT = N/A		GUIDELINE = 0 (A1)	
JAN	.	0	.	.	.	.
FEB	.	0	.	.	.	.
MAR	.	0	.	.	.	.
APR	.	0	.	.	.	.
MAY	.	.	.	0	.	.
TOTAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0		GUIDELINE = 5/100ML(A1)	
JAN	BDL	0	.	.	.	.
FEB	BDL	0	.	.	.	.
MAR	BDL	0	.	.	.	.
APR	BDL	0	.	.	.	.
MAY	.	.	.	0	.	.
DEC	BDL	0	.	0	.	.
T COLIFORM BCKGRD MF (CT/100ML)			DET'N LIMIT = 0		GUIDELINE = N/A	
DEC	100	0	.	0	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

		SITE 1		SITE 2	
		STANDING	FREE FLOW	STANDING	FREE FLOW

CHEMISTRY (FLD)					
FLD CHLORINE (COMB) ()		DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.300	.400	.200	.100	.100
FEB	.220	.200	.200	.	.100
MAR	.560	.	.050	.100	.100
APR	.350	.200	.200	.	.
MAY	.230	.	.250	.	.
JUN	.000	.	.	.	.
JUL	.000	.	.	.	.
AUG	.000	.200	.200	.	.
SEP	1.210	.	.200	.	.
OCT	.380	.100	.	.	.
NOV	.170	.200	.200	.	.
DEC	.030	.150	.	.	.

FLD CHLORINE FREE ()		DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.450	.300	.100	.300	.300
FEB	.460	.100	.100	.	.300
MAR	.550	.	.300	.300	.300
APR	.500	.100	.100	.	.
MAY	.620	.	.	.	.
JUN	.000	.	.	.	.
JUL	.000	.	.	.	.
AUG	.000	.100	.100	.	.
SEP	.580	.	.100	.	.
OCT	.560	.200	.	.	.
NOV	.620	.100	.100	.	.
DEC	.530	.100	.	.	.

FLD CHLORINE (TOTAL) ()		DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.750	.700	.300	.400	.400
FEB	.680	.300	.400	.	.400
MAR	1.110	.	.350	.400	.400
APR	.850	.300	.300	.	.
MAY	.850	.	.250	.	.
JUN	.590	.	.	.	.
JUL	.800	.	.	.	.
AUG	.720	.300	.300	.	.
SEP	.630	.	.300	.	.
OCT	.940	.300	.	.	.
NOV	.790	.300	.300	.	.
DEC	.500	.250	.	.	.

FLD PH (DMNSLESS)		DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)	
JAN	7.220	7.140	7.200	7.400	7.400
FEB	7.320	7.130	7.200	7.500	6.900
MAR	7.420	7.230	.	7.200	7.200

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2		
			STANDING	FREE FLOW	STANDING	FREE FLOW	
APR	7.600	7.600	7.200	7.200	.	.	
MAY	.	7.180	.	7.400	.	.	
JUN	7.480	7.130	.	.	.	.	
JUL	7.870	7.310	.	.	.	.	
AUG	7.460	7.220	7.200	7.200	.	.	
SEP	7.680	7.240	.	7.200	.	.	
OCT	7.120	7.020	7.200	.	.	.	
NOV	7.250	6.980	7.200	7.200	.	.	
DEC	7.690	7.520	7.400	.	.	.	
FLD TEMPERATURE (DEG.C)			DET'M LIMIT = N/A		GUIDELINE = 15 (A1)		
JAN	2.000	2.000	3.500	.	2.500	2.500	
FEB	2.000	2.000	4.000	4.000	22.000	4.000	
MAR	2.500	2.500	.	4.000	4.000	4.000	
APR	4.000	4.000	4.000	4.000	.	.	
MAY	.	13.000	.	11.000	.	.	
JUN	20.000	20.000	.	.	.	.	
JUL	27.500	27.500	.	.	.	.	
AUG	24.500	24.500	21.000	21.000	.	.	
SEP	17.000	17.000	.	18.000	.	.	
OCT	11.000	11.000	13.000	.	.	.	
NOV	3.000	3.000	3.000	3.000	.	.	
DEC	.100	.100	3.000	.	.	.	
FLD TURBIDITY (FTU)			DET'M LIMIT = N/A		GUIDELINE = 1.0 (A1)		
JAN	1.300	.070	.	.	.	.	
FEB	1.000	.060	.	.	.	.	
MAR	1.900	.080	.	.	.	.	
APR	.	.080	.	.	.	.	
MAY	.	.110	.	.110	.	.	
JUN	1.400	.070	.	.	.	.	
JUL	1.160	.170	.	.	.	.	
AUG	2.900	.080	.	.	.	.	
SEP	4.040	.130	.	.	.	.	
OCT	1.100	.080	.	.	.	.	
NOV	1.000	.070	.	.	.	.	
DEC	.700	.070	.	.	.	.	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

		RAW	TREATED	SITE 1		SITE 2	
				STANDING	FREE FLOW	STANDING	FREE FLOW

CHEMISTRY (LAB)							
ALKALINITY (MG/L)				DET'M LIMIT = .200		GUIDELINE = 30-500 (A4)	
JAN	56.500	63.000	63.800	62.900	63.600	118	
FEB	56.900	60.300	58.400	58.300	60.700	61.000	
MAR	55.800	58.800	62.100	59.200	60.100	118	
APR	55.800	60.400	60.600	58.200	.	.	
MAY	52.800	59.300	61.100	57.900	.	.	
JUN	51.800	60.200	.	.	.	.	
JUL	51.300	55.200	.	.	.	.	
AUG	47.900	50.400	55.000	53.500	.	.	
SEP	48.100	52.500	53.000	51.100	.	.	
OCT	49.800	57.600	60.100	57.200	.	.	
NOV	50.100	55.100	58.800	55.400	.	.	
DEC	49.900	56.900	59.300	56.500	.	.	

CALCIUM (MG/L)				DET'M LIMIT = .100		GUIDELINE = 100 (F2)	
JAN	14.600	15.000	15.200	15.400	15.200	15.200	
FEB	16.400	17.600	16.400	16.400	16.800	16.600	
MAR	16.800	16.800	17.800	16.800	17.200	118	
APR	15.600	15.600	17.200	16.600	.	.	
MAY	14.800	15.400	15.600	15.200	.	.	
JUN	16.000	15.800	.	.	.	.	
JUL	15.400	15.400	.	.	.	.	
AUG	14.400	14.600	15.000	14.800	.	.	
SEP	17.900	15.000	18.200	18.600	.	.	
OCT	14.900	15.200	15.400	15.400	.	.	
NOV	15.600	15.600	16.000	15.800	.	.	
DEC	14.800	14.600	15.400	14.800	.	.	

CHLORIDE (MG/L)				DET'M LIMIT = .200		GUIDELINE = 250 (A3)	
JAN	3.200	5.500	5.400	5.200	5.500	5.600	
FEB	3.600	5.000	5.500	5.400	5.000	5.000	
MAR	3.900	5.800	6.000	5.600	5.800	118	
APR	3.700	6.300	5.800	5.800	.	.	
MAY	3.400	2.600	2.410	2.350	.	.	
JUN	3.400	6.800	.	.	.	.	
JUL	3.000	6.800	.	.	.	.	
AUG	3.000	7.200	7.100	6.800	.	.	
SEP	3.500	6.400	7.100	6.900	.	.	
OCT	3.300	6.400	6.600	6.800	.	.	
NOV	3.300	5.300	5.500	5.300	.	.	
DEC	3.300	5.400	5.700	5.500	.	.	

COLOUR (NZU)				DET'M LIMIT = .5		GUIDELINE = 5.0 (A3)	
JAN	15.000	6.500	3.000	3.000	3.000	3.000	
FEB	16.000	8.000	2.000 <T	2.000 <T	3.000	2.500	
MAR	14.500	4.500	BOL	4.000	4.000	118	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
APR	17.500	6.500	3.000	3.500	.	.
MAY	21.500	BDL	2.500	3.500	.	.
JUN	18.500	3.500	.	.	.	.
JUL	20.000	3.500	.	.	.	.
AUG	18.500	2.500	2.500	3.000	.	.
SEP	19.000	3.500	2.000 <T	3.000	.	.
OCT	21.000	5.500	2.500	3.500	.	.
NOV	19.500	3.000	3.000	3.000	.	.
DEC	19.000	3.500	2.500	3.500	.	.
CONDUCTIVITY (UMHO/CM)			DET'N LIMIT = 1		GUIDELINE = 400 (F2)	
JAN	130	202	203	201	203	115
FEB	136	207	209	203	208	208
MAR	136	203	207	204	207	115
APR	138	212	204	201	.	.
MAY	127	202	206	201	.	.
JUN	122	204	.	.	.	.
JUL	119	197	.	.	.	.
AUG	115	190	197	195	.	.
SEP	116	187	189	187	.	.
OCT	117	197	199	197	.	.
NOV	119	192	196	192	.	.
DEC	119	195	199	196	.	.
FLUORIDE (MG/L)			DET'N LIMIT = .01		GUIDELINE = 2.400 (A1)	
JAN	.060	.880	.940	.900	.880	115
FEB	.040 <T	.840	1.100	1.000	.860	.860
MAR	.060	1.020	.940	.960	1.000	115
APR	BDL	.020 <T	.940	.900	15M	15M
MAY	.080	.920	1.040	.960	.	.
JUN	.060	.040 <T	.	.	.	.
JUL	.060	.980	.	.	.	.
AUG	.060	.900	.940	.920	.	.
SEP	.060	.880	.920	.920	.	.
OCT	.080	.800	.880	.860	.	.
NOV	.040 <T	.740	.720	.760	.	.
DEC	.080	.020 <T	.320	.340	.	.
HARDNESS (MG/L)			DET'N LIMIT = .500		GUIDELINE = 80-100 (A4)	
JAN	57.000	58.000	59.000	59.000	59.000	59.000
FEB	64.000	67.000	61.000	62.000	65.000	65.000
MAR	64.000	64.000	66.000	64.000	65.000	115
APR	61.000	62.000	65.000	64.000	.	.
MAY	58.000	59.000	59.000	59.000	.	.
JUN	60.000	59.000	.	.	.	.
JUL	58.000	58.000	.	.	.	.
AUG	54.000	55.000	56.000	55.000	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
SEP	62.700	57.000	63.800	64.600	.	.
OCT	57.500	58.500	59.000	59.000	.	.
NOV	58.000	58.000	59.000	59.000	.	.
DEC	55.000	54.000	57.000	55.000	.	.
IONCAL (DMNSLESS)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	3.157	.907	.957	3.191	3.195	.000 NAF
FEB	5.937	7.493	1.277	4.198	5.568	4.729
MAR	5.753	8.299	8.140	9.719	9.560	.000 NAF
APR	4.685	4.112	6.940	7.458	.	.
MAY	1.151	13.120	7.069	9.362	.	.
JUN	8.228	4.650	.	.	.	.
JUL	8.395	7.775	.	.	.	.
AUG	8.630	4.439	3.987	5.533	.	.
SEP	22.500	4.882	15.530	16.440	.	.
OCT	6.870	5.255	3.092	6.352	.	.
NOV	2.429	3.425	.878	2.817	.	.
DEC	3.240	1.438	.147	.744	.	.
LANGELIERS INDEX (DMNSLESS)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	-.615	-.375	-.604	-1.074	-.606	.
FEB	-1.044	-.817	-.802	-.811	-.895	-1.008
MAR	-.432	-.406	-.509	-.394	-.368	.
APR	-.495	-.330	-.284	-.285	.	.
MAY	-.667	-.590	-.593	-.546	.	.
JUN	-.539	-.393	.	.	.	.
JUL	-.388	-.349	.	.	.	.
AUG	-.576	-.519	-.532	-.509	.	.
SEP	-.600	-.619	-.521	-.547	.	.
OCT	-.695	-.517	-.413	-.434	.	.
NOV	-.663	-.443	-.455	-.605	.	.
DEC	-.418	-.319	-.469	-.416	.	.
MAGNESIUM (MG/L)			DET'N LIMIT = .050		GUIDELINE = 30 (F2)	
JAN	5.000	5.100	5.100	5.100	5.100	5.000
FEB	5.600	5.500	4.900	5.100	5.600	5.600
MAR	5.300	5.400	5.300	5.400	5.300	115
APR	5.500	5.600	5.500	5.400	.	.
MAY	5.000	4.900	5.000	5.000	.	.
JUN	4.900	4.900	.	.	.	.
JUL	4.700	4.800	.	.	.	.
AUG	4.400	4.400	4.400	4.400	.	.
SEP	4.400	4.700	4.500	4.400	.	.
OCT	4.920	5.000	5.000	5.000	.	.
NOV	4.700	4.600	4.600	4.800	.	.
DEC	4.400	4.300	4.500	4.500	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

		RAW	TREATED	SITE 1		SITE 2	
				STANDING	FREE FLOW	STANDING	FREE FLOW
SODIUM (MG/L)				DET'N LIMIT = .200		GUIDELINE = 200 (C3)	
JAN	3.200	18.000	17.800	17.800	19.000	18.200	
FEB	3.400	17.600	17.600	17.000	17.800	17.800	
MAR	3.400	17.200	17.800	17.800	18.200	11S	
APR	3.200	18.000	17.200	17.200	.	.	
MAY	3.200	9.800	19.200	18.600	.	.	
JUN	3.000	19.200	.	.	.	.	
JUL	3.200	18.200	.	.	.	.	
AUG	3.600	17.400	19.000	19.000	.	.	
SEP	3.000	17.000	17.600	17.200	.	.	
OCT	2.700	18.200	18.300	18.500	.	.	
NOV	2.800	17.000	17.200	16.400	.	.	
DEC	3.200	18.000	18.400	18.000	.	.	
AMMONIUM TOTAL (MG/L)				DET'N LIMIT = 0.002		GUIDELINE = .05 (F2)	
JAN	.004 <T	.006 <T	.014	.010	.008 <T	.010	
FEB	BDL	.018	.006 <T	.008 <T	.006 <T	.004 <T	
MAR	.002 <T	BDL	.012	.006 <T	.002 <T	11S	
APR	.018	.032	.022	.002 <T	.	.	
MAY	.044	.002 <T	.058	.002 <T	.	.	
JUN	.042	.006 <T	.	.	.	.	
JUL	.024	.010	.	.	.	.	
AUG	.096	BDL	.012	BDL	.	.	
SEP	.150	BDL	.032	BDL	.	.	
OCT	.094	BDL	.028	.004 <T	.	.	
NOV	.014	.006 <T	.014	BDL	.	.	
DEC	.010	BDL	.002 <T	.002 <T	.	.	
NITRITE (MG/L)				DET'N LIMIT = 0.001		GUIDELINE = 1.000 (A1)	
JAN	.002 <T	.002 <T	.002 <T	.002 <T	.002 <T	.002 <T	
FEB	.002 <T	.003 <T	.003 <T	.004 <T	.001 <T	.002 <T	
MAR	.004 <T	.002 <T	.002 <T	.003 <T	.003 <T	11S	
APR	.023	.003 <T	.002 <T	.002 <T	.	.	
MAY	.013	.005	.002 <T	.002 <T	.	.	
JUN	.005	.003 <T	.	.	.	.	
JUL	.001 <T	.002 <T	.	.	.	.	
AUG	.005	.005	.005	.005	.	.	
SEP	.002 <T	BDL	.002 <T	.002 <T	.	.	
OCT	.005	.001 <T	.003 <T	.003 <T	.	.	
NOV	.002 <T	.001 <T	.002 <T	.001 <T	.	.	
DEC	.002 <T	.001 <T	.001 <T	.001 <T	.	.	
TOTAL NITRATES (MG/L)				DET'N LIMIT = .020		GUIDELINE = 10.000 (A1)	
JAN	.160	.190	.185	.175	.185	.180	
FEB	.150	.185	.930	.210	.180	.185	
MAR	.170	.180	.185	.195	.195	11S	
APR	.180	.190	.195	.190	.	.	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
MAY	.015 <T	.005 <T	.020 <T	.040	.	.
JUN	BDL	BDL	.	.	.	.
JUL	.010 <T	.005 <T	.	.	.	.
AUG	.005 <T	.005 <T	BDL	.005 <T	.	.
SEP	.010 <T	.005 <T	.005 <T	BDL	.	.
OCT	.045	.040	.040	.035	.	.
NOV	.700	.095	.095	.085	.	.
DEC	.085	.095	.095	.095	.	.

NITROGEN TOT KJELD (MG/L)			DET'N LIMIT = .020		GUIDELINE = N/A	
JAN	.430	.250	.250	.210	.230	115
FEB	.440	.290	.310	.270	.240	.240
MAR	.460	.260	.270	.260	.280	115
APR	.450	.270	.260	.250	ISM	ISM
MAY	.510	.310	.270	.250	.	.
JUN	.480	.230	.	.	.	.
JUL	.450	.230	.	.	.	.
AUG	.550	.250	.240	.240	.	.
SEP	.710	.240	.250	.250	.	.
OCT	.560	.340	.240	.220	.	.
NOV	.470	.210	.230	.220	.	.
DEC	.460	.230	.240	.240	.	.

PH (DIMENSIONLESS)			DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)	
JAN	7.840	8.050	7.810	7.340	7.810	115
FEB	7.360	7.560	7.620	7.610	7.500	7.390
MAR	7.970	8.000	7.850	8.010	8.020	115
APR	7.940	8.100	8.100	8.130	.	.
MAY	7.810	7.850	7.830	7.910	.	.
JUN	7.910	8.030	.	.	.	.
JUL	8.080	8.120	.	.	.	.
AUG	7.950	8.010	7.950	7.990	.	.
SEP	7.830	7.880	7.890	7.870	.	.
OCT	7.800	7.940	8.020	8.020	.	.
NOV	7.810	8.020	7.970	7.850	.	.
DEC	8.080	8.160	7.970	8.060	.	.

PHOSPHORUS FIL REACT (MG/L)			DET'N LIMIT = .0005		GUIDELINE = N/A	
JAN	.002	.003	.	.	.	.
FEB	.000 <T	.001 <T	.	.	.	.
MAR	.003	.000 <T	.	.	.	.
APR	.006	.000 <T	.	.	.	.
MAY	.003	BDL	.	.	.	.
JUN	.000 <T	.000 <T	.	.	.	.
JUL	BDL	.000 <T	.	.	.	.
AUG	.003	.000 <T	.	.	.	.
SEP	.001 <T	BDL	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
OCT	.003	BDL	.	.	.	.
NOV	.001 <T	BDL	.	.	.	.
DEC	.001 <T	BDL	.	.	.	.
PHOSPHORUS TOTAL (MG/L)			DET'N LIMIT = .002		GUIDELINE = .40 (F2)	
JAN	.023	.003 <T	.	.	.	.
FEB	.018	.004 <T	.	.	.	.
MAR	.020	.004 <T	.	.	.	.
APR	.017	.009 <T	.	.	.	.
MAY	.021	.004 <T	.	.	.	.
JUN	.021	BDL	.	.	.	.
JUL	.013	.002 <T	.	.	.	.
AUG	.019	.002 <T	.	.	.	.
SEP	.023	.005 <T	.	.	.	.
OCT	.020	.013	.	.	.	.
NOV	.020	.004 <T	.	.	.	.
DEC	.019	.002 <T	.	.	.	.
SULPHATE (MG/L)			DET'N LIMIT = .200		GUIDELINE = 500. (A3)	
JAN	4.250	24.270	23.720	23.350	24.170	24.160
FEB	4.690	28.430	27.550	27.170	28.690	28.680
MAR	5.140	25.110	24.850	24.940	25.200	11S
APR	3.700	26.180	25.800	25.900	.	.
MAY	6.000	26.340	29.020	27.990	.	.
JUN	4.890	26.000	.	.	.	.
JUL	4.040	24.890	.	.	.	.
AUG	4.910	26.770	27.060	27.080	.	.
SEP	3.780	26.740	24.530	25.650	.	.
OCT	4.740	25.380	25.340	25.360	.	.
NOV	5.410	27.650	27.450	27.930	.	.
DEC	5.000	28.560	28.000	28.140	.	.
TURBIDITY (FTU)			DET'N LIMIT = .02		GUIDELINE = 1.00 (A1)	
JAN	1.900	1CR	.580	.640	.460	11S
FEB	2.000	.830	.480	.320	.230 <T	.130 <T
MAR	3.400	3.200	11S	.900	.620	11S
APR	2.000	1CR	.730	.620	.	.
MAY	1.710	.440	.800	.690	.	.
JUN	1.950	.820	.	.	.	.
JUL	1.110	.600	.	.	.	.
AUG	1.740	.650	.560	.730	.	.
SEP	2.000	.480	.570	.580	.	.
OCT	1.740	3.000	.360	.320	.	.
NOV	2.400	.220 <T	.880	.380	.	.
DEC	1.600	.460	.230	.210	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
METALS						
SILVER (UG/L)	DET'M LIMIT = .020 GUIDELINE = 50. (A1)					
JAN	BDL	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	BDL	BDL	.030 <T	BDL
MAR	BDL	BDL	BDL	.110 <T	BDL	.050 <T
APR	ISM	ISM	.050 <T	.030 <T	ISM	.
MAY	BDL	BDL	.030 <T	BDL	.	.
JUN	BDL	BDL	.	.	.	.
JUL	.030 <T	BDL	.	.	.	.
AUG	BDL	.030 <T	BDL	BDL	.	.
SEP	BDL	BDL	BDL	BDL	.	.
OCT	BDL	BDL	BDL	BDL	.	.
NOV	BDL	BDL	BDL	BDL	.	.
DEC	BDL	BDL	BDL	BDL	.	.
ALUMINUM (UG/L)	DET'M LIMIT = .050 GUIDELINE = 100.(A4)					
JAN	24.360	38.280	35.960	32.480	29.000	30.160
FEB	51.040	37.120	9.164	27.840	29.000	23.200
MAR	54.520	33.640	16.240	33.640	2.900	32.480
APR	ISM	ISM	13.920	29.000	ISM	.
MAY	27.000	24.000	9.500	21.000	.	.
JUN	45.000	23.000	.	.	.	.
JUL	21.000	24.800	.	.	.	.
AUG	17.000	26.000	23.000	24.000	.	.
SEP	31.000	26.300	23.000	23.000	.	.
OCT	20.000	32.000	22.000	19.000	.	.
NOV	69.000	29.000	24.000	24.000	.	.
DEC	19.000	30.000	22.000	22.000	.	.
ARSENIC (UG/L)	DET'M LIMIT = 0.050 GUIDELINE = 50.0 (A1)					
JAN	.890 <T	.270 <T	.270 <T	.270 <T	.410 <T	.280 <T
FEB	1.200	.660 <T	.720 <T	.620 <T	.670 <T	.600 <T
MAR	1.000 <T	.490 <T	1.000 <T	.750 <T	.850 <T	.680 <T
APR	ISM	ISM	1.100	.610 <T	ISM	.
MAY	1.200	.340 <T	.890 <T	.430 <T	.	.
JUN	1.100	.500 <T	.	.	.	.
JUL	1.000 <T	.750 <T	.	.	.	.
AUG	1.500	.770 <T	.940 <T	.780 <T	.	.
SEP	.900 <T	.570 <T	.530 <T	.470 <T	.	.
OCT	.850 <T	.370 <T	.300 <T	.100 <T	.	.
NOV	.790 <T	.410 <T	.250 <T	.390 <T	.	.
DEC	.760 <T	.420 <T	.310 <T	.250 <T	.	.
BARIUM (UG/L)	DET'M LIMIT = 0.020 GUIDELINE = 1000. (A1)					
JAN	14.000	14.000	19.000	13.000	14.000	13.000
FEB	15.000	14.000	15.000	13.000	17.000	13.000
MAR	15.000	14.000	16.000	13.000	.370	12.400

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
APR	ISM	ISM	15.000	14.000	ISM	.
MAY	16.000	14.000	14.000	14.000	.	.
JUN	14.000	13.000	.	.	.	.
JUL	13.000	13.000	.	.	.	.
AUG	13.000	12.000	12.000	12.000	.	.
SEP	12.000	11.400	11.000	11.000	.	.
OCT	12.000	11.000	13.000	10.000	.	.
NOV	12.000	11.000	13.000	11.000	.	.
DEC	13.000	12.000	12.000	12.000	.	.

BORON (UG/L)

DET'M LIMIT = 0.200 GUIDELINE = 5000. (A1)

JAN	14.000 <T	11.000 <T	11.000 <T	10.000 <T	8.800 <T	9.000 <T
FEB	35.000	23.000	15.000 <T	47.000	55.000	35.000
MAR	20.000 <T	20.000 <T	16.000 <T	29.000	BDL	13.100 <T
APR	ISM	ISM	39.000	17.000 <T	ISM	.
MAY	13.000 <T	19.000 <T	14.000 <T	12.000 <T	.	.
JUN	12.000 <T	12.000 <T	.	.	.	.
JUL	13.000 <T	16.000 <T	.	.	.	.
AUG	19.000 <T	11.000 <T	21.000	21.000	.	.
SEP	21.000	12.800 <T	13.000 <T	13.000 <T	.	.
OCT	9.800 <T	8.600 <T	8.100 <T	8.500 <T	.	.
NOV	8.400 <T	7.700 <T	10.000 <T	13.000 <T	.	.
DEC	9.700 <T	9.100 <T	15.000 <T	14.000 <T	.	.

BERYLLIUM (UG/L)

DET'M LIMIT = 0.010 GUIDELINE = N/A

JAN	BDL	BDL	.060 <T	.020 <T	.020 <T	BDL
FEB	BDL	BDL	BDL	BDL	.050 <T	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL
APR	ISM	ISM	.060 <T	BDL	ISM	.
MAY	.050 <T	BDL	BDL	BDL	.	.
JUN	BDL	BDL	.	.	.	.
JUL	.130 <T	.040 <T	.	.	.	.
AUG	.020 <T	BDL	.040 <T	.030 <T	.	.
SEP	.030 <T	.050 <T	.020 <T	BDL	.	.
OCT	.050 <T	BDL	BDL	.020 <T	.	.
NOV	BDL	BDL	.020 <T	.030 <T	.	.
DEC	BDL	BDL	BDL	BDL	.	.

CADMIUM (UG/L)

DET'M LIMIT = 0.050 GUIDELINE = 5.000 (A1)

JAN	BDL	BDL	BDL	BDL	BDL	BDL
FEB	.090 <T	.330 <T	BDL	BDL	.070 <T	.080 <T
MAR	BDL	BDL	BDL	BDL	BDL	.200 <T
APR	ISM	ISM	BDL	.060 <T	ISM	.
MAY	.070 <T	BDL	BDL	BDL	.	.
JUN	.060 <T	.070 <T	.	.	.	.
JUL	BDL	BDL	.	.	.	.
AUG	BDL	BDL	BDL	BDL	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KEMORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
SEP	BDL	BDL	BDL	BDL	.	.
OCT	BDL	BDL	BDL	BDL	.	.
NOV	BDL	BDL	BDL	BDL	.	.
DEC	BDL	BDL	BDL	BDL	.	.
COBALT (UG/L)						
DET'N LIMIT = 0.020 GUIDELINE = N/A						
JAN	.090 <T	.130 <T	.070 <T	.060 <T	.070 <T	.190 <T
FEB	.130 <T	.210 <T	.090 <T	.070 <T	.110 <T	.090 <T
MAR	.110 <T	.130 <T	.160 <T	.160 <T	BDL	.130 <T
APR	ISM	ISM	.210 <T	.150 <T	ISM	.
MAY	.190 <T	.210 <T	.160 <T	.140 <T	.	.
JUN	.290 <T	.290 <T	.	.	.	.
JUL	.150 <T	.580 <T	.	.	.	.
AUG	.140 <T	.160 <T	.120 <T	.160 <T	.	.
SEP	.120 <T	.080 <T	.040 <T	.050 <T	.	.
OCT	.090 <T	.130 <T	.100 <T	.050 <T	.	.
NOV	.190 <T	.090 <T	.080 <T	.090 <T	.	.
DEC	.110 <T	.140 <T	.080 <T	.110 <T	.	.
CHROMIUM (UG/L)						
DET'N LIMIT = 0.100 GUIDELINE = 50. (A1)						
JAN	BDL	BDL	BDL	BDL	BDL	BDL
FEB	2.300	.960 <T	.670 <T	5.600	4.600	2.300
MAR	.310 <T	BDL	BDL	.550 <T	BDL	BDL
APR	ISM	ISM	1.300	.240 <T	ISM	.
MAY	2.600	4.600	3.500	1.600	.	.
JUN	.920 <T	.890 <T	.	.	.	.
JUL	1.100	1.600	.	.	.	.
AUG	2.300	.960 <T	2.700	2.600	.	.
SEP	2.700	1.900	1.000 <T	.880 <T	.	.
OCT	.920 <T	.210 <T	BDL	BDL	.	.
NOV	BDL	BDL	.260 <T	1.500	.	.
DEC	.900 <T	BDL	1.600 <T	1.200 <T	.	.
COPPER (UG/L)						
DET'N LIMIT = .100 GUIDELINE = 1000 (A3)						
JAN	2.300	35.000	720.000	52.000	230.000	27.000
FEB	4.500	1.700	2000.000	50.000	830.000	31.000
MAR	5.700	2.100	1400.000	46.000	6.600	24.400
APR	ISM	ISM	1900.000	72.000	ISM	.
MAY	2.400	3.500	1800.000	140.000	.	.
JUN	2.600	2.000	.	.	.	.
JUL	.800 <T	3.280	.	.	.	.
AUG	1.700	4.900	210.000	68.000	.	.
SEP	2.700	4.700	430.000	110.000	.	.
OCT	2.000	1.400	480.000	75.000	.	.
NOV	3.100	.940 <T	570.000	68.000	.	.
DEC	1.300 <T	1.400 <T	130.000	48.000	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW

IRON (UG/L)	DET'M LIMIT = 4.000 GUIDELINE = 300. (A3)					
JAN	46.000 <T	570.000	27.000 <T	22.530 <T	29.000 <T	20.000 <T
FEB	50.000 <T	910.000	22.000 <T	19.000 <T	BDL	5.600 <T
MAR	62.000	460.000	12.000 <T	15.000 <T	2200.000	20.000 <T
APR	ISM	ISM	14.000 <T	19.000 <T	ISM	.
MAY	41.000 <T	19.000 <T	BDL	BDL	.	.
JUN	49.000 <T	17.000 <T	.	.	.	.
JUL	33.000 <T	56.000	.	.	.	.
AUG	28.000 <T	16.000 <T	13.000 <T	7.600 <T	.	.
SEP	54.000	10.800 <T	15.000 <T	20.000 <T	.	.
OCT	39.000 <T	320.000	12.000 <T	19.000 <T	.	.
NOV	59.000	17.000 <T	11.000 <T	15.000 <T	.	.
DEC	33.000 <T	18.000 <T	9.200 <T	15.000 <T	.	.

MERCURY (UG/L)	DET'M LIMIT = 0.010 GUIDELINE = 1.000 (A1)					
JAN	BDL	BDL	.	.150	.	BDL
FEB	BDL	BDL	.	.190	.	BDL
MAR	BDL	BDL	.	.220	.	.220
APR	.020 <T	BDL	.	.160	.	.
MAY	BDL	BDL	.	BDL	.	.
JUN	BDL	.020 <T	.	.	.	.
JUL	BDL	BDL	.	.	.	.
AUG	BDL	BDL	.	.160	.	.
SEP	BDL	.020 <T	.	.150	.	.
OCT	BDL	.020 <T	.	.170	.	.
NOV	.030 <T	.020 <T	.	.180	.	.
DEC	.050 <T	.030 <T	.	BDL	.	.

MANGANESE (UG/L)	DET'M LIMIT = .050 GUIDELINE = 50.0 (A3)					
JAN	4.100	5.000	1.200	.830	.870	.810
FEB	4.200	9.200	1.300	.990	1.000	.820
MAR	5.300	5.300	1.800	1.100	.190 <T	1.240
APR	ISM	ISM	2.200	2.000	ISM	.
MAY	8.300	1.200	.750	1.100	.	.
JUN	11.000	3.700	.	.	.	.
JUL	11.000	2.250	.	.	.	.
AUG	13.000	1.400	1.200	.830	.	.
SEP	14.000	1.600	1.800	1.500	.	.
OCT	11.000	6.700	2.300	1.400	.	.
NOV	9.300	.860	.770	.750	.	.
DEC	8.500	.990	.650	.690	.	.

MOLYBDENUM (UG/L)	DET'M LIMIT = 0.020 GUIDELINE = N/A					
JAN	.100 <T	.080 <T	.150 <T	.280 <T	.180 <T	.220 <T
FEB	.320 <T	.160 <T	.480 <T	.490 <T	.430 <T	.370 <T
MAR	.370 <T	.270 <T	.540	.460 <T	BDL	.560
APR	ISM	ISM	.540	.440 <T	ISM	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
MAY	.420 <T	.640	.700	.680	.	.
JUN	.290 <T	.570	.	.	.	.
JUL	.260 <T	.420 <T	.	.	.	.
AUG	.310 <T	.440 <T	.520	.460 <T	.	.
SEP	.140 <T	.290 <T	.250 <T	.270 <T	.	.
OCT	.110 <T	.040 <T	.200 <T	.160 <T	.	.
NOV	.160 <T	.230 <T	.170 <T	.230 <T	.	.
DEC	.160 <T	.120 <T	.190 <T	.190 <T	.	.
NICKEL (UG/L)			DET'M LIMIT = 0.100 GUIDELINE = 50. (F3)			
JAN	BDL	.600 <T	BDL	BDL	BDL	.200 <T
FEB	.440 <T	1.300 <T	.630 <T	.260 <T	.450 <T	.400 <T
MAR	.780 <T	.700 <T	.840 <T	.880 <T	BDL	.950 <T
APR	ISM	ISM	1.500 <T	1.300 <T	ISM	.
MAY	.960 <T	1.300 <T	1.600 <T	1.300 <T	.	.
JUN	2.900	3.100	.	.	.	.
JUL	.260 <T	.340 <T	.	.	.	.
AUG	.730 <T	.990 <T	.970 <T	.640 <T	.	.
SEP	.280 <T	.410 <T	.560 <T	.430 <T	.	.
OCT	.500 <T	1.100 <T	.800 <T	.340 <T	.	.
NOV	.370 <T	.260 <T	1.000 <T	.730 <T	.	.
DEC	.460 <T	.340 <T	.620 <T	.410 <T	.	.
LEAD (UG/L)			DET'M LIMIT = 0.050 GUIDELINE = 50. (A1)			
JAN	.390	37.000	3.700	.470	3.900	.480
FEB	.470	1.700	14.000	.670	7.400	.690
MAR	1.600	1.700	31.000	.840	BDL	.740
APR	ISM	ISM	12.000	1.100	ISM	.
MAY	.560	1.100	16.000	1.600	.	.
JUN	.590	1.100	.	.	.	.
JUL	.250	2.900	.	.	.	.
AUG	.580	6.000	5.000	1.300	.	.
SEP	.310	1.200	6.100	3.500	.	.
OCT	.230	.790	6.900	1.000	.	.
NOV	.250	.090 <T	6.500	.920	.	.
DEC	.180 <T	10.000	2.000	.560	.	.
ANTIMONY (UG/L)			DET'M LIMIT = .050 GUIDELINE = 146. (D4)			
JAN	.330	.480	.420	.410	.350	.650
FEB	.500	.590	.540	.520	.550	.480
MAR	.440	.510	.740	.810	BDL	.820
APR	ISM	ISM	.650	.640	ISM	.
MAY	.880	.440	.900	.690	.	.
JUN	.640	.650	.	.	.	.
JUL	.630	1.600	.	.	.	.
AUG	.640	.780	.700	.770	.	.
SEP	.450	.500	.450	.490	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
OCT	.160 <T	.150 <T	.220	.380	.	.
NOV	.430	.450	.440	.460	.	.
DEC	.300 <T	.300 <T	.390 <T	.340 <T	.	.
SELENIUM (UG/L)			DET'N LIMIT = 0.200 GUIDELINE = 10. (A1)			
JAN	.610 <T	BDL	.440 <T	1.310 <T	BDL	1.700 <T
FEB	1.500 <T	.230 <T	1.900 <T	3.200 <T	1.900 <T	1.200 <T
MAR	BDL	.850 <T	BDL	.900 <T	18.000	1.160 <T
APR	ISM	ISM	1.400 <T	1.600 <T	ISM	.
MAY	1.800 <T	.570 <T	1.200 <T	2.700 <T	.	.
JUN	BDL	BDL	.	.	.	.
JUL	BDL	1.700 <T	.	.	.	.
AUG	BDL	1.300 <T	BDL	2.400 <T	.	.
SEP	BDL	BDL	BDL	BDL	.	.
OCT	BDL	BDL	BDL	BDL	.	.
NOV	1.100 <T	BDL	BDL	BDL	.	.
DEC	1.200 <T	BDL	BDL	BDL	.	.
STRONTIUM (UG/L)			DET'N LIMIT = .050 GUIDELINE = N/A			
JAN	32.000	31.000	35.000	31.250	30.000	31.000
FEB	32.000	32.000	35.000	32.000	34.000	33.000
MAR	30.000	31.000	36.000	33.000	2.400	31.500
APR	ISM	ISM	35.000	32.000	ISM	.
MAY	31.000	31.000	32.000	33.000	.	.
JUN	28.000	29.000	.	.	.	.
JUL	30.000	30.000	.	.	.	.
AUG	28.000	28.000	27.000	29.000	.	.
SEP	33.000	29.000	27.000	27.000	.	.
OCT	31.000	30.000	31.000	28.000	.	.
NOV	27.000	28.000	30.000	28.000	.	.
DEC	30.000	30.000	31.000	30.000	.	.
TITANIUM (UG/L)			DET'N LIMIT = .050 GUIDELINE = N/A			
JAN	3.500	3.200	3.600	3.500	2.600	2.500
FEB	4.100	2.500	3.600	3.400	2.800	2.500
MAR	5.800	4.100	6.300	6.000	BDL	3.900
APR	ISM	ISM	4.700	4.100	ISM	.
MAY	6.400	4.400	5.900	4.600	.	.
JUN	6.000	5.500	.	.	.	.
JUL	4.300	7.210	.	.	.	.
AUG	5.800	5.700	5.600	6.000	.	.
SEP	4.200	2.700	2.900	3.100	.	.
OCT	3.100	2.600	2.900	2.500	.	.
NOV	5.100	2.100	2.200	2.100	.	.
DEC	3.200 <T	2.300 <T	3.200 <T	2.800 <T	.	.
THALLIUM (UG/L)			DET'N LIMIT = .010 GUIDELINE = 13. (D4)			

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JAN	BDL	BDL	BDL	BDL	BDL	BDL
FEB	BDL	BDL	.090 <T	.050 <T	BDL	BDL
MAR	BDL	BDL	.050 <T	BDL	BDL	.020 <T
APR	ISM	ISM	.070 <T	.040 <T	ISM	.
MAY	BDL	BDL	.030 <T	BDL	.	.
JUN	BDL	BDL	.	.	.	.
JUL	BDL	.050 <T	.	.	.	.
AUG	BDL	BDL	.020 <T	BDL	.	.
SEP	BDL	BDL	BDL	BDL	.	.
OCT	BDL	BDL	BDL	BDL	.	.
NOV	BDL	BDL	BDL	BDL	.	.
DEC	BDL	BDL	BDL	BDL	.	.
URANIUM (UG/L)			DET'N LIMIT = .020 GUIDELINE = 100.(B1)			
JAN	.080 <T	BDL	BDL	BDL	BDL	BDL
FEB	.120 <T	.040 <T	.070 <T	.040 <T	BDL	BDL
MAR	BDL	BDL	.030 <T	BDL	BDL	.080 <T
APR	ISM	ISM	.040 <T	.030 <T	ISM	.
MAY	.210	.060 <T	.030 <T	.030 <T	.	.
JUN	.170 <T	.080 <T	.	.	.	.
JUL	.160 <T	.050 <T	.	.	.	.
AUG	.130 <T	.080 <T	.050 <T	.050 <T	.	.
SEP	BDL	BDL	BDL	BDL	.	.
OCT	BDL	BDL	BDL	BDL	.	.
NOV	.050 <T	BDL	BDL	BDL	.	.
DEC	.070 <T	BDL	BDL	BDL	.	.
VANADIUM (UG/L)			DET'N LIMIT = .050 GUIDELINE = N/A			
JAN	.410 <T	.190 <T	.170 <T	.150 <T	.120 <T	.130 <T
FEB	.500 <T	.220 <T	.140 <T	.210 <T	.250 <T	.220 <T
MAR	.460 <T	.240 <T	.250 <T	.200 <T	.040 <T	.260 <T
APR	ISM	ISM	.230 <T	.250 <T	ISM	.
MAY	.490 <T	.190 <T	.240 <T	.330 <T	.	.
JUN	.470 <T	.470 <T	.	.	.	.
JUL	.480 <T	.430 <T	.	.	.	.
AUG	.460 <T	.320 <T	.350 <T	.370 <T	.	.
SEP	.420 <T	.240 <T	.230 <T	.230 <T	.	.
OCT	.340 <T	.210 <T	.160 <T	.150 <T	.	.
NOV	.480 <T	.200 <T	.170 <T	.170 <T	.	.
DEC	.390 <T	.130 <T	.090 <T	.080 <T	.	.
ZINC (UG/L)			DET'N LIMIT = .001 GUIDELINE = 5000. (A3)			
JAN	2.500	670.000	16.000	2.850	12.000	2.200
FEB	2.200	230.000	12.000	5.100	24.000	3.900
MAR	23.000	37.000	12.000	1.900	.570 <T	3.270
APR	ISM	ISM	17.000	3.400	ISM	.
MAY	2.400	30.000	25.000	4.300	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JUN	2.200	9.800	.	.	.	.
JUL	BDL	19.000	.	.	.	.
AUG	1.700	32.000	9.000	3.000	.	.
SEP	.950 <T	12.500	5.400	2.100	.	.
OCT	1.800	12.000	10.000	2.600	.	.
NOV	1.800	5.100	12.000	2.300	.	.
DEC	1.100 <T	14.000	4.600	2.300	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

		SITE 1		SITE 2	
RAW		TREATED			
		STANDING	FREE FLOW	STANDING	FREE FLOW

PESTICIDES & PCB					
ALPHA BHC (NG/L)		DET'N LIMIT = 1.000		GUIDELINE = 700 (G)	
JAN	BDL	1.000 <T	.	1.000 <T	.
FEB	BDL	.	.	BDL	.
MAR	IPE	IPE	.	BDL	.
APR	BDL	BDL	.	1.000 <T	.
MAY	BDL	BDL	.	BDL	.
JUN	BDL	BDL	.	.	.
JUL	BDL	BDL	.	.	.
AUG	BDL	BDL	.	2.000 <T	.
SEP	BDL	1.000 <T	.	BDL	.
OCT	BDL	1.000 <T	.	BDL	.
NOV	BDL	1.000 <T	.	BDL	.
DEC	IPE	BDL	.	BDL	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
RAW	TREATED		SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
PHENOLICS			DET ^N LIMIT = 0.2		GUIDELINE = 2.00 (A3)	
PHENOLICS (UG/L)						
JAN	3.500	2.600	.	.	.	.
FEB	1.400	187	.	.	.	.
MAR	2.600	2.600	.	.	.	.
APR	2.400	2.000	.	.	.	.
MAY	1.400	1.600	.	.	.	.
JUN	1.400	.600 <T	.	.	.	.
JUL	.800 <T	1.200	.	.	.	.
AUG	1.000	.600 <T	.	.	.	.
SEP	2.400	2.000	.	.	.	.
OCT	4.000	8.000	.	.	.	.
NOV	1.400	1.600	.	.	.	.
DEC	.400 <T	.600 <T	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KEMORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

RAW		TREATED		SITE 1		SITE 2	
				STANDING	FREE FLOW	STANDING	FREE FLOW
VOLATILES							
BENZENE (UG/L)		DET'M LIMIT = .050 GUIDELINE = 5.0 (B1)					
JAN	BDL	BDL	.	BDL	.	BDL	
MAR	BDL	BDL	.	BDL	.	BDL	
APR	BDL	BDL	.	BDL	.	.	
MAY	BDL	.300 <T	.	.200 <T	.	.	
JUN	.100 <T	BDL	.	.	.	.	
JUL	IU	.100	.	.	.	.	
AUG	BDL	BDL	.	BDL	.	.	
SEP	BDL	BDL	.	BDL	.	.	
OCT	.100 <T	.100 <T	.	BDL	.	.	
NOV	BDL	BDL	.	BDL	.	.	
DEC	BDL	BDL	.	BDL	.	.	
TOLUENE (UG/L)		DET'M LIMIT = .050 GUIDELINE = 24.0 (B4)					
JAN	.100 <T	BDL	.	.050 <T	.	BDL	
MAR	.300 <T	BDL	.	BDL	.	BDL	
APR	BDL	.100 <T	.	.100 <T	.	.	
MAY	BDL	.500	.	.500	.	.	
JUN	.300 <T	.300 <T	.	.	.	.	
JUL	IU	.100 <T	.	.	.	.	
AUG	BDL	.100 <T	.	.100 <T	.	.	
SEP	BDL	BDL	.	.050 <T	.	.	
OCT	BDL	.200 <T	.	.100 <T	.	.	
NOV	BDL	BDL	.	BDL	.	.	
DEC	BDL	.050 <T	.	BDL	.	.	
ETHYLBENZENE (UG/L)		DET'M LIMIT = .050 GUIDELINE = 2.4 (B4)					
JAN	BDL	BDL	.	BDL	.	BDL	
MAR	.200 <T	BDL	.	BDL	.	BDL	
APR	BDL	BDL	.	BDL	.	.	
MAY	BDL	.150 <T	.	.150 <T	.	.	
JUN	BDL	BDL	.	.	.	.	
JUL	IU	BDL	.	.	.	.	
AUG	BDL	BDL	.	BDL	.	.	
SEP	BDL	BDL	.	BDL	.	.	
OCT	BDL	.050 <T	.	.050 <T	.	.	
NOV	BDL	BDL	.	BDL	.	.	
DEC	BDL	BDL	.	BDL	.	.	
M-XYLENE (UG/L)		DET'M LIMIT = .100 GUIDELINE = 300 (B4)					
JAN	BDL	BDL	.	BDL	.	BDL	
MAR	.100 <T	BDL	.	BDL	.	BDL	
APR	BDL	BDL	.	BDL	.	.	
MAY	BDL	.700 <T	.	.600 <T	.	.	
JUN	BDL	BDL	.	.	.	.	
JUL	IU	BDL	.	.	.	.	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
AUG	BDL	BDL	.	BDL	.	.
SEP	BDL	BDL	.	.100 <T	.	.
OCT	BDL	.200 <T	.	BDL	.	.
NOV	BDL	BDL	.	BDL	.	.
DEC	BDL	BDL	.	BDL	.	.
O-XYLENE (UG/L)			DET'M LIMIT = .050 GUIDELINE = 300 (B4)			
JAN	BDL	.050 <T	.	BDL	.	BDL
MAR	.100 <T	BDL	.	.050 <T	.	BDL
APR	BDL	.050 <T	.	.050 <T	.	.
MAY	BDL	.400 <T	.	.350 <T	.	.
JUN	BDL	BDL	.	.	.	.
JUL	IU	BDL	.	.	.	.
AUG	BDL	BDL	.	BDL	.	.
SEP	BDL	BDL	.	.050 <T	.	.
OCT	BDL	.150 <T	.	.050 <T	.	.
NOV	BDL	BDL	.	BDL	.	.
DEC	BDL	BDL	.	BDL	.	.
STYRENE (UG/L)			DET'M LIMIT = .050 GUIDELINE = 46.5 (D2)			
JAN	.050 <T	BDL	.	BDL	.	BDL
MAR	1.100	.150 <T	.	BDL	.	.150 <T
APR	BDL	.150 <T	.	.100 <T	.	.
MAY	BDL	.200 <T	.	.300 <T	.	.
JUN	BDL	.150 <T	.	.	.	.
JUL	IU	.200 <T	.	.	.	.
AUG	BDL	.050 <T	.	.050 <T	.	.
SEP	BDL	.100 <T	.	BDL	.	.
OCT	BDL	.050 <T	.	.100 <T	.	.
NOV	BDL	.100 <T	.	.100 <T	.	.
DEC	BDL	BDL	.	BDL	.	.
CHLOROFORM (UG/L)			DET'M LIMIT = .100 GUIDELINE = 350 (A1+)			
JAN	3.500	97.200	.	97.700	.	106.000
MAR	9.200	83.200	.	81.400	.	87.200
APR	4.700	112.000	.	110.000	.	.
MAY	2.400	130.000	.	120.000	.	.
JUN	11.200	210.000	.	.	.	.
JUL	IU	180.000	.	.	.	.
AUG	4.600	166.000	.	150.000	.	.
SEP	6.200	145.500	.	142.500	.	.
OCT	4.300	123.000	.	133.200	.	.
NOV	6.000	83.400	.	79.100	.	.
DEC	4.600	102.600	.	98.100	.	.
111, TRICHLOROETHANE (UG/L)			DET'M LIMIT = .020 GUIDELINE = 200 (D1)			
JAN	BDL	BDL	.	BDL	.	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
MAR	.040 <T	BDL	.	BDL	.	BDL
APR	BDL	BDL	.	BDL	.	.
MAY	.020 <T	BDL	.	BDL	.	.
JUN	BDL	BDL	.	.	.	.
JUL	1U	BDL	.	.	.	.
AUG	BDL	BDL	.	BDL	.	.
SEP	.020 <T	BDL	.	BDL	.	.
OCT	BDL	BDL	.	BDL	.	.
NOV	.060 <T	BDL	.	BDL	.	.
DEC	BDL	BDL	.	BDL	.	.
DICHLOOROBROMOMETHANE (UG/L)			DET'M LIMIT = .050 GUIDELINE = 350 (A1+)			
JAN	.300 <T	4.000	.	4.050	.	4.350
MAR	.500	3.050	.	3.200	.	3.200
APR	.200 <T	4.400	.	3.400	.	.
MAY	.050 <T	3.800	.	4.200	.	.
JUN	.400 <T	4.800	.	.	.	.
JUL	1U	5.250	.	.	.	.
AUG	BDL	4.500	.	4.400	.	.
SEP	.350 <T	4.500	.	4.400	.	.
OCT	.300 <T	4.050	.	4.800	.	.
NOV	.250 <T	3.350	.	3.050	.	.
DEC	.300 <T	3.700	.	3.250	.	.
CHLORODIBROMOMETHANE (UG/L)			DET'M LIMIT = .100 GUIDELINE = 350 (A1+)			
JAN	BDL	BDL	.	BDL	.	BDL
MAR	BDL	BDL	.	BDL	.	BDL
APR	BDL	BDL	.	BDL	.	.
MAY	BDL	BDL	.	.100 <T	.	.
JUN	BDL	BDL	.	.	.	.
JUL	1U	.300 <T	.	.	.	.
AUG	BDL	BDL	.	.200 <T	.	.
SEP	BDL	.100 <T	.	.100 <T	.	.
OCT	BDL	.100 <T	.	.300 <T	.	.
NOV	BDL	BDL	.	BDL	.	.
DEC	BDL	BDL	.	BDL	.	.
1,4 DICHLOOROBENZENE (UG/L)			DET'M LIMIT = .100 GUIDELINE = 5.0 (B1)			
JAN	BDL	BDL	.	BDL	.	BDL
MAR	BDL	BDL	.	BDL	.	BDL
APR	BDL	BDL	.	BDL	.	.
MAY	BDL	BDL	.	BDL	.	.
JUN	BDL	.100 <T	.	.	.	.
JUL	1U	BDL	.	.	.	.
AUG	BDL	BDL	.	BDL	.	.
SEP	BDL	BDL	.	BDL	.	.
OCT	BDL	BDL	.	BDL	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KENORA WTP 1989

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
NOV	BDL	BDL	.	BDL	.	.
DEC	BDL	BDL	.	BDL	.	.
TOTL TRIHALOMETHANES (UG/L)			DET'N LIMIT = .500 GUIDELINE = 350 (A1)			
JAN	3.800 <T	101.200	.	101.750	.	110.350
MAR	9.700	86.250	.	84.600	.	90.400
APR	4.900 <T	116.400	.	113.400	.	.
MAY	2.450 <T	133.800	.	124.300	.	.
JUN	11.600	214.800	.	.	.	.
JUL	IU	185.550	.	.	.	.
AUG	4.600 <T	170.500	.	154.550	.	.
SEP	6.550	150.100	.	147.000	.	.
OCT	4.600 <T	127.150	.	138.300	.	.
NOV	6.250	86.750	.	82.150	.	.
DEC	4.950 <T	106.300	.	101.300	.	.

TRACE LEVELS OF TOLUENE ARE LABORATORY ARTIFACTS DERIVED FROM THE ANALYTICAL METHODOLOGY.

TRACE LEVELS OF STYRENE ARE CONSIDERED TO BE LABORATORY ARTIFACTS RESULTING FROM THE LABORATORY SHIPPING CONTAINERS.

Table 6

<u>SCAN/PARAMETER</u>	<u>UNIT</u>	<u>DETECTION</u>		<u>GUIDELINE</u>
BACTERIOLOGICAL				
STANDARD PLATE COUNT MEMBRANE FILTRATION	CT/ML	0		500/ML(A1)
P/A BOTTLE		0		0 (A1*)
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0		5/100mL(A1)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0		N/A
CHLOROAROMATICS				
HEXACHLOROBUTADIENE	NG/L	1.000	450.	(D4)
1,2,3-TRICHLOROBENZENE	NG/L	5.000	10000	(I)
1,2,3,4-TETRACHLOROBENZENE	NG/L	1.000	10000	(I)
1,2,3,5-TETRACHLOROBENZENE	NG/L	1.000	10000	(I)
1,2,4-TRICHLOROBENZENE	NG/L	5.000	10000	(I)
1,2,4,5-TETRACHLOROBENZENE	NG/L	1.000	38000	(D4)
1,3,5-TRICHLOROBENZENE	NG/L	5.000	10000	(D4)
HEXACHLOROBENZENE	NG/L	1.0	10.	(C1)
HEXACHLOROETHANE	NG/L	1.000	1900.	(D4)
OCTACHLOROSTYRENE	NG/L	1.000	N/A	
PENTACHLOROBENZENE	NG/L	1.000	74000	(D4)
2,3,6-TRICHLOROTOLUENE	NG/L	5.000	N/A	
2,4,5-TRICHLOROTOLUENE	NG/L	5.000	N/A	
2,6,A-TRICHLOROTOLUENE	NG/L	5.000	N/A	
CHLOROPHENOLS				
2,3,4-TRICHLOROPHENOL	NG/L	50.	N/A	
2,3,4,5-TETRACHLOROPHENOL	NG/L	50.	N/A	
2,3,5,6-TETRACHLOROPHENOL	NG/L	50.	N/A	
2,4,5-TRICHLOROPHENOL	NG/L	50.	2600000	(D4)
2,4,6-TRICHLOROPHENOL	NG/L	50.	2000.	(B4)
PENTACHLOROPHENOL	NG/L	50.	30000.	(B4)
CHEMISTRY (FLD)				
FIELD COMBINED CHLORINE RESIDUAL	MG/L	N/A	N/A	
FIELD FREE CHLORINE RESIDUAL	MG/L	N/A	N/A	
FIELD TOTAL CHLORINE RESIDUAL	MG/L	N/A	N/A	
FIELD PH	DMSNLESS	N/A	6.5-8.5	(A4)
FIELD TEMPERATURE	°C	N/A	<15	°C(A1)
FIELD TURBIDITY	FTU	N/A	1.0	(A1)
CHEMISTRY (LAB)				
ALKALINITY	MG/L	.200	30-500	(A4)
CALCIUM	MG/L	.100	100.	(F2)
CYANIDE	MG/L	.001	.20	(A1)
CHLORIDE	MG/L	.200	250.	(A3)
COLOUR	TCU	.5	5.0	(A3)
CONDUCTIVITY	UMHO/CM	1.	400.	(F2)
FLUORIDE	MG/L	.01	2.4	(A1)
HARDNESS	MG/L	.50	80-100	(A4)
MAGNESIUM	MG/L	.05	30.	(F2)

SCAN/PARAMETER	DETECTION		
	UNIT	LIMIT	GUIDELINE
NITRITE	MG/L	.001	1.0 (A1)
TOTAL NITRATES	MG/L	.02	10. (A1)
NITROGEN TOTAL KJELDAHL	MG/L	.02	N/A
PH	DMSNLESS	N/A	6.5-8.5 (A4)
PHOSPHORUS FIL REACT	MG/L	.0005	N/A
PHOSPHORUS TOTAL	MG/L	.002	.40 (F2)
TOTAL SOLIDS	MG/L	1.	500. (A3)
TURBIDITY	FTU	.02	1.0 (A1)

METALS

ALUMINUM	UG/L	.050	100. (A4)
ANTIMONY	UG/L	.050	10. (F3)
ARSENIC	UG/L	.050	50. (A1)
BARIUM	UG/L	.020	1000. (A1)
BORON	UG/L	.200	5000. (A1)
BERYLLIUM	UG/L	.010	0.20 (H)
CADMIUM	UG/L	.050	5.0 (A1)
COBALT	UG/L	.020	1000. (H)
CHROMIUM	UG/L	.100	50. (A1)
COPPER	UG/L	.100	1000. (A3)
IRON	UG/L	5.0	300. (A3)
MERCURY	UG/L	.01	1.0 (A1)
MANGANESE	UG/L	.050	50. (A3)
MOLYBDENUM	UG/L	.020	500. (H)
NICKEL	UG/L	.100	50. (F3)
LEAD	UG/L	.020	50. (A1)
SELENIUM	UG/L	.200	10. (A1)
SILVER	UG/L	.020	50. (A1)
STRONTIUM	UG/L	.100	2000. (H)
THALLIUM	UG/L	.010	13. (D4)
TITANIUM	UG/L	.100	N/A
URANIUM	UG/L	.020	20. (A2)
VANADIUM	UG/L	.020	100. (H)
ZINC	UG/L	.020	5000. (A3)

PHENOLICS

PHENOLICS (UNFILTERED REACTIVE)	UG/L	.2	2.0 (A3)
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PESTICIDES & PCB

ALDRIN	NG/L	1.0	700. (A1)
AMETRINE	NG/L	50.	300000. (D3)
ATRAZINE	NG/L	50.	60000. (B3)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	700. (G)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300. (G)
GAMMA HEXACHLOROCYCLOHEXANE (LINDANE)	NG/L	1.0	4000. (A1)
ALPHA CHLORDANE	NG/L	2.0	7000. (A1)
GAMMA CHLORDANE	NG/L	2.0	7000. (A1)
BLADEx	NG/L	100.	10000. (B3)
DIELDRIN	NG/L	2.0	700. (A1)
METHOXYCHLOR	NG/L	5.0	900000. (B1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000. (D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	4.0	74000. (D4)
ENDRIN	NG/L	4.0	200. (A1)
ENDOSULFAN SULPHATE (THIODAN SULPHATE)	NG/L	4.0	N/A
HEPTACHLOR EPOXIDE	NG/L	1.0	3000. (A1)

SCAN/PARAMETER	DETECTION		
	UNIT	LIMIT	GUIDELINE
HEPTACHLOR	NG/L	1.0	3000. (A1)
METOLACHLOR	NG/L	500.	50000. (B3)
MIREX	NG/L	5.0	N/A
OXYCHLORDANE	NG/L	2.0	N/A
O, P-DDT	NG/L	5.0	30000. (A1)
PCB	NG/L	20.0	3000. (A2)
O, P-DDD	NG/L	5.0	N/A
PPDDE	NG/L	1.0	30000. (A1)
PPDDT	NG/L	5.0	30000. (A1)
ATRATONE	NG/L	50.	N/A
ALACHLOR	NG/L	500.	35000. (D2)
PROMETONE	NG/L	50.	52500. (D3)
PROPazine	NG/L	50.	16000. (D2)
PROMETRYNE	NG/L	50.	1000. (B3)
SENCOR (METRIBUZIN)	NG/L	100.	80000. (B2)
SIMAZINE	NG/L	50.	10000. (B3)

POLYAROMATIC HYDROCARBONS

PHENANTHRENE	NG/L	10.0	N/A
ANTHRACENE	NG/L	1.0	N/A
FLUORANTHENE	NG/L	20.0	42000. (D4)
PYRENE	NG/L	20.0	N/A
BENZO(A)ANTHRACENE	NG/L	20.0	N/A
CHRYSENE	NG/L	50.0	N/A
DIMETHYL BENZO(A)ANTHRACENE	NG/L	5.0	N/A
BENZO(E)PYRENE	NG/L	50.0	N/A
BENZO(B)FLUORANTHENE	NG/L	10.0	N/A
PERYLENE	NG/L	10.0	N/A
BENZO(K)FLUORANTHENE	NG/L	1.0	N/A
BENZO(A)PYRENE	NG/L	5.0	10. (B1)
BENZO(G,H,I)PERYLENE	NG/L	20.0	N/A
DIBENZO(A,H)ANTHRACENE	NG/L	10.0	N/A
INDENO(1,2,3-C,D)PYRENE	NG/L	20.0	N/A
BENZO(B)CHRYSENE	NG/L	2.0	N/A
CORONENE	NG/L	10.0	N/A

SPECIFIC PESTICIDES

TOXAPHENE	NG/L	N/A	5000. (A1)
2,4,5-TRICHLOROBUTYRIC ACID (2,4,5-T)	NG/L	50.	200000. (B4)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000. (A1)
2,4-DICHLOROPHENOXYBUTYRIC ACID	NG/L	200.	18000. (B3)
2,4-D PROPIONIC ACID	NG/L	100.	N/A
DICAMBA	NG/L	100.	120000. (B1)
PICLORAM	NG/L	100.	190000. (B3)
SILVEX (2,4,5-TP)	NG/L	50.	10000. (A1)
DIAZINON	NG/L	20.	20000. (B1)
DICHLOROVOS	NG/L	20.	N/A
DURSBAN	NG/L	20.	N/A
ETHION	NG/L	20.	35000. (G)
GUTHION(AZINPHOSMETHYL)	NG/L	N/A	20000. (B1)
MALATHION	NG/L	20.	190000. (B1)
MEVINPHOS	NG/L	20.	N/A
METHYL PARATHION	NG/L	50.	7000. (A1)
METHYLTRITHION	NG/L	20.	N/A
PARATHION	NG/L	20.	50000. (B1)

<u>SCAN/PARAMETER</u>	<u>DETECTION</u>		
	<u>UNIT</u>	<u>LIMIT</u>	<u>GUIDELINE</u>
PHORATE (THIMET)	NG/L	20.	2000. (B3)
RELDAN	NG/L	20.	N/A
RONNEL	NG/L	20.	N/A
AMINOCARB	NG/L	N/A	N/A
BENONYL	NG/L	N/A	N/A
BUX (METALKAMATE)	NG/L	2000.	N/A
CARBOFURAN	NG/L	2000.	90000. (B1)
CICP (CHLOROPROPHAM)	NG/L	2000.	350000. (G)
DIALATE	NG/L	2000.	30000. (H)
EPTAM	NG/L	2000.	N/A
IPC	NG/L	2000.	N/A
PROPOXUR (BAYGON)	NG/L	2000.	90000. (G)
SEVIN (CARBARYL)	NG/L	200.	90000. (B1)
SUTAN (BUTYLATE)	NG/L	2000.	245000. (D3)
 <u>VOLATILES</u>			
BENZENE	UG/L	.050	5.0 (B1)
TOLUENE	UG/L	.050	24.0 (B4)
ETHYLBENZENE	UG/L	.050	2.4 (B4)
PARA-XYLENE	UG/L	.100	300. (B4)
META-XYLENE	UG/L	.100	300. (B4)
ORTHO-XYLENE	UG/L	.050	300. (B4)
1,1-DICHLOROETHYLENE	UG/L	.100	7.0 (D1)
ETHYLENE DIBROMIDE	UG/L	.05	.05 G)
METHYLENE CHLORIDE	UG/L	.500	50. (B1)
TRANS-1,2-DICHLOROETHYLENE	UG/L	.100	70. (D5)
1,1-DICHLOROETHANE	UG/L	.100	N/A
CHLOROFORM	UG/L	.100	350. (A1+)
1,1,1-TRICHLOROETHANE	UG/L	.020	200. (D1)
1,2-DICHLOROETHANE	UG/L	.050	5.0 (D1)
CARBON TETRACHLORIDE	UG/L	.200	5.0 (B1)
1,2-DICHLOROPROPANE	UG/L	.050	6.0 (D5)
TRICHLOROETHYLENE	UG/L	.100	50. (B1)
DICHLOROBROMOMETHANE	UG/L	.050	350. (A1+)
1,1,2-TRICHLOROETHANE	UG/L	.050	.60 (D4)
CHLORODIBROMOMETHANE	UG/L	.100	350. (A1+)
TETRACHLOROETHYLENE	UG/L	.050	10.0 (C2)
BROMOFORM	UG/L	.200	350. (A1+)
1,1,2,2-TETRACHLOROETHANE	UG/L	.050	0.17 (D4)
CHLOROBENZENE	UG/L	.100	60. (D5)
1,4-DICHLOROBENZENE	UG/L	.100	1.0 (B4)
1,3-DICHLOROBENZENE	UG/L	.100	130. (G)
1,2-DICHLOROBENZENE	UG/L	.050	3.0 (B4)
TRIFLUOROCHLOROTOLUENE	UG/L	.100	N/A
TOTAL TRIHALOMETHANES	UG/L	.500	350. (A1)
STYRENE	UG/L	.05	140. (D5)